GULLIVERIANA.

GULLIVERIANA:

AN AUTOBIOGRAPHY;

INCLUDING

BRIEF NOTICES OF SOME OF THE AUTHOR'S CONTEMPORARIES,

NOTES ON SWIFT'S GULLIVER,

AN ACCOUNT OF THE DUEL BETWEEN FAWCETT AND MUNRO,

A VISIT TO THE NORTHERN SCENES OF IZAAK WALTON'S ANGLER,

RAMBLES ABOUT WINDSOR,

AND

THE HUNTERIAN ORATION OF 1863.

Hoc est vivere bis
Vita posse priore frui.
Martial.

BY

GEORGE GULLIVER, F.R.S., F.R.C.S.E.,

LATE PROFESSOR OF ANATOMY AND PHYSIOLOGY TO THAT COLLEGE, HONORARY FELLOW OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND, AND SURGEON IN THE ROYAL REGIMENT OF HORSE GUARDS.

(Not published. Only 25 copies printed, and all for strictly private use).

Canterbury:
CROSS & JACKMAN.
1881.

CONTENTS.

CHAPTER V.

CHAPTER VI.

CHAPTER VII.

CHAPTER VIII.

CHAPTER IX.

JOHN DAVY:

CHAPTER X.

CHAPTER XI.

CHAPTER XII.

CHAPTER XIII.

CHAPTER XIV.

CHAPTER XV.

CHAPTER XVI.

CHAPTER XVII.

CHAPTER XVIII.

CHAPTER I.

BIRTH, PARENTAGE, SCHOOL, p. 1—CHURCHES, 2—SURNAME AND GULLIVER'S TRAVELS, 2—DEATHLESS BOOKS, 4.

Probably few old men have thought much on their past lives, without a feeling that a diary thereof would afford some matter of interest, if not to the public, at least to surviving relations and friends. Montaigne indeed judiciously advises that "No man should make too much of his own merits or fortunes." Mine, though the best part of my life has been passed in the army, have been sufficiently dull and common-place. Hence I need no such caution. But as much of that time has been devoted to physiological pursuits, certain subjects have come under my observation that may have some interest, especially to my son, and mayhap to other anatomists, and would certainly have had such value had I kept regular notes thereof. However, not having done so, the following retrospect is drawn up, in the seventy-fourth year of my age, and during the confinement of chronic bodily suffering. Under such circumstances the narrative is likely to want due chronological sequence, and to abound too much in confusion, digressions and other irregularities, especially as the matters will be jotted down just as they occur at the time to the mind, and I cannot expect to be able to give them a fairly methodical arrangement. They will include trivial recollections personal to myself, and recall some few memories, whether bright or dark, of other persons and things, and still fewer not wholly devoid of some biographical or historical value. On the whole the notes will show, as better men have shown, that the situation of a medical officer in the army, with all its inconveniences and distractions, is not necessarily a hindrance to scientific pursuits.

As to my birth and education little can be said to my advantage. Indeed, considering the disadvantages of my early life, it has often puzzled me how I surmounted them. It was rather by systematic self-denial, by economy of time and money, by diligence in the pursuit of my profession, than by any other merit. Being a sickly child, I was sent for several years to a farm house, at Avon Dasset, and so lost much valuable time that should have been passed at school. But that rural retreat imparted to me a love of brooks and green fields, hills and hedge-banks, and manifold other natural objects; and this taste, including that for breezy downs and furzy commons and song of birds, has ever remained with me. I was born on the 4th of June, 1804, the very year during which the great Napoleon was threatening England with his army at Boulogne-sur-mer, and the date when there was the usual rejoicing on the birthday of King George the Third. My mother was Mary, whose maiden name was Tuck, a Norwich woman. By her my father, Samuel Gulliver, had six children, all born at Banbury in Oxfordshire, where, and at the neighbouring village of Bodicote, he inherited a small estate. I was the fourth of his children. He had a good library, and an inclination to literature, which he in some measure imparted to me; and he was one of the original subscribers to Baker's History of Northamptonshire, a large folio book still much esteemed. I was sent from home to be educated, or rather taught, under the care of the Reverend William Woolston, B.A., the master of a school at the village of Adderbury, three miles from Banbury. Under him I learned a little Latin and less Greek, but picked up a partiality which has clung to me through life, and added much to the interest of my rambles throughout the country. He was fond of ecclesiastical architecture and church bells; and within

three or four miles of his school were three fine churches with good peals of bells. These mediæval buildings are well known generally, and in the neighbourhood particularly, as "Adderbury for strength, Bloxham for length, and King's Sutton for beauty," in allusion to the respective character of their spires. Cowper's beautiful apostrophe to village bells, and the tribute by Pope and Rogers to the "heaven-directed spire," never fail to recall these churches to my mind. The churches with which I was since familiar near Windsor are mentioned in Chapter XVIII.

Respecting my surname, and the celebrated *Gulliver's Travels*, Dean Swift's statement in the first page of that satirical romance is a literal truth; to wit, "I have observed in the churchyard at Banbury, in Oxfordshire, several tombs and monuments of the Gullivers." My father was wont to tell how some of his old contemporaries or immediate predecessors well remembered, after the name of the author of the Travels had become public, a current tradition of Swift's previous visit or visits to Banbury; and that Lemuel Gulliver was but an adaptation of Samuel Gulliver, with an alteration only of the two first letters, the name of the said Samuel Gulliver being then plainly engraved on one or more of the monuments in the churchyard of that town. Indeed the surname was formerly very common about the borders of Oxfordshire and Northamptonshire, though not so elsewhere; but it has since become more widely diffused. In my youth some of the families thus named were, like myself, of humble condition, and it was remarkable that they claimed no relationship with each other.

But soon after, and probably years before, the publication of the Travels, there were Gullivers in America. Pope (Works, 12mo., Lond. 1770, vol. vi., pp. 174-7) writing to Swift, March 23, 1727-8, sent a paper printed at Boston in New England, containing the name of a real Jonathan Gulliver, a member of the American parliament. Pope adds, "If the fame of the traveller Gulliver has travelled thither, it has travelled very quick, to have persons already named after the supposed author. But if you object, that no child so lately christened could be arrived at years of maturity to be elected into parliament, I reply (to solve the riddle) that the person is an Anabaptist, and not christened till of full age, which sets all right. However it be, the accident is very singular that the two names should be united." After having lain for ten years in manuscript, the first edition of Gulliver's Travels was published in London, without the author's name, by B. Motte, 1726-7, and was afterwards the subject of much pleasantry as to the real author, in the correspondence between Swift, Gay, and Pope. In answer to Pope's letter, Swift wrote on the 10th of May, 1728, "I have with pleasure shown the New England newspaper, with the two names Jonathan Gulliver, and I remember Mr. Fortescue sent you an account from the Assizes, of one Lemuel Gulliver who had a cause there, and lost it on his ill reputation of being a liar."

Though this may have been the Dean's waggery, Gulliver would seem to have been a name known in North America before Swift was born. In the 'Athenæum,' September 15, 1877, is a letter signed Thomas Butler Gunn, of Wardington, Banbury, Oxon., affirming as much, though on what authority does not appear, unless we accept it as his own. He says—"The Gullivers have been known in New England for two centuries, and there Americans will tell you, Swift got his name. It appeared for many years with the veritable prefix of 'Lemuel' before it, on a sign in Washington Street, Boston, U.S., less than a quarter of a century ago. Of course, one supposed that the owner of it must have been named after the discovery of Lilliput and Laputa, but inquiry refuted that impression. I was told that Lemuel was a time-honored ancestral name, which had been in the family before Swift was born. A tradition in the town of Milton, Massachusetts, where the Gullivers originally settled, ran as follows:—

There were two brothers emigrated from Ireland to America about the middle of the seventeenth century, one of whom named Lemuel, returned home again after a sojourn of some years, while the other remained to become the progenitor of the New England Gullivers. This Lemuel was notorious in his neighbourhood subsequently for the marvellous character of his traveller's stories, one of which is said to have been that the frogs in America were as tall as a man's knee, and had musical voices like the twang of a guitar, not so very much an exaggeration. However, his name passed into a local proverb for unveracity. Now it is not unlikely that this neighbourhood was that of Kilkenny, where Swift went to school, or at Laracor, where he lived after his first return to Ireland; and that the name of Lemuel Gulliver, identified with this particular character, might have inhered in his memory, and that, when he was meditating a name for his immortal voyager, this one occurred to him—at once odd, yet appropriate and natural."

Still, though Mr. Gunn may consider it 'not unlikely' that Swift got the name of Gulliver from a tradition at Kilkenny, we have, as already stated, his express declaration for Banbury; and this is further confirmed by subsequent local evidence. This town too was certainly odious to Swift as a stanch churchman. It was notorious for dissenters, especially puritans, which last he often represented as the fathers of all the former, and he was often writing against them altogether, by argument, assertion, and ridicule. He detested them. There is a page or more of references showing this feeling in the index to his collected Works, besides the spirit shown generally in the 'Tale of a Tub' and in the 'Memoirs of Captain John Creighton,' and particularly as regards the town in the Second Section of the 'Discourse concerning the Mechanical Operations of the Spirit.' Swift in this discourse makes fun of *snuffling*, or conveying sounds through the nose, as one of the inspirations of the spirit; and in the midst of his banter says—"As yet snuffling was not, when the following adventure happened to a Banbury Saint. Upon a certain day, while he was thus engaged among the tabernacles of the wicked, he felt the inward man put in odd commotions, and strangely pricked forward and inward; an effect very usual among the modern inspired." It is curious that this passage has escaped the notice of Alfred Beesley, the excellent historian of Banbury. Snuffling too had long been a subject of satire. In Nalson's Collections, under the head of Litany, dated in 1641, we read of—

* * * * * "Those
That snuffle their unlearned zeal in prose,
As if the way to heaven was through the nose."

Cowper, in the second book of the Task, has a fling at "the odious nasal twang, heard at conventicles."

Sir Walter Scott, in the Sixth Section of his 'Life of Swift,' when illustrating the air of reality given to the person of Lemuel Gulliver, remarks that "one seaman is said to have sworn that he knew Captain Gulliver very well, but that he lived at Wapping and not at Rotherhithe." And this oath might have been true as far as regards the name, for it has long been known in that part of London; and even now, in the 'Police Intelligence' of the newspapers (June 23, 1880), there is reported a charge against one Henry Gulliver, of 30, Aberfeldy Street, Poplar. In my youth the name existed thereabouts. I was acquainted with a Captain Henry Gulliver, who was in the merchant-marine and lived, when at home, somewhere near to if not at Wapping. The son of this Henry Gulliver was educated, under the domestic care of his good grandmother and aunts, at Eton school, and afterwards rose to the rank of Colonel in the Indian army. About the same time too, or a little before Colonel Gulliver was at Eton, the passengers in the Gravesend boats might see a large board facing the

Thames near Wapping, probably in that parish, on which in large letters appeared 'Gulliver, Boat-builder,' as was often seen by me and others between the years 1826 and 1830. Moreover, in the first chapter of the Voyage to Lilliput, Gulliver tells us that he removed from the Old Jewry to Fetter Lane, and from there to Wapping. I was well acquainted with Mrs. Horsford, the mother, and the two maiden sisters of Captain Henry Gulliver, three ladies who were for many years respected Dames at Eton College.

One of my predecessors as a medical Officer in the Blues, had the same surname as mine, only his had an f instead of a v in the last syllable. The name is of Norman origin. It was at first Golofre, as printed both by Hollinshead and Stow in the Roll of Battle Abbey; afterwards Golofer, Gullifre, Gulifre, or Gullifer, and finally Gulliver. According to Fuller, in his 'History of the Worthies of England,' under the Sheriffes of Buckinghamshire, Johannes Gowfre was the same with him who, in the time of Henry the Fifth, was written John Golofre, and in Stanley's 'Memorials of Westminster Abbey,' 8° Lond. 1868, p. 196, is a notice of John Golofre, who lived in the fourteenth century, was Ambassador of Richard the Second in France, and lies buried beneath that King's tomb in the Abbey. Some of the Gullivers, as is recorded in Baker's 'History of Northamptonshire,' had estates in the county and represented it in Parliament. But I never knew anything of them or their descendents, nor if any of them still exist. In my youth there were several families of my name at or near Banbury, with none of whom is it known that I have any relationship. In the Clergy List of 1875 occurs the name of Hale Gulliver, without the addition of any locality. The list of the victims of the awful disaster of the 'Princess Alice' steamboat had the name of a Mrs. Gullifer. Some time ago there was a chemist named Gulliver near Belgrave Square; Mrs. Gulliver, 32, Inverness Terrace, Bayswater, is or lately was a governor of the Hospital for Consumption, Brompton; the death has recently occurred of Mr. Gulliver, at the Ram Inn, Gloucester; and I have lately received a trade circular, offering a colored heraldic crest of the name of my family for the small charge of seven shillings. In short Gullivers are increasing and have now become far more broadly spread throughout the country than they were in my youth.

Many pleasantries have occurred in connexion with my name. When given, in answer to demand, during shooting or fishing excursions, it was apt to prove a stumbling block. 'Gulliver!' said a Perthshire laird, among the turnips and partridges, 'Hoolie, coaxin' clickmaclaver; you'll no fleather me that gaet.' On being introduced to a stranger, his reception might be — "Happy to make your acquaintance Mr. Gulliver. I have long known your name." In remote country inns the name would cause merriment, and even in petty sequestered villages the women would sometimes put up the corners of their aprons to hide their titters. This was a proof of the wide popularity of the Travels upwards of a century after their publication, and such as Swift could not have anticipated when he was writing them at the house of a friend at the secluded village of Quilca in Ireland, and simply for a temporary political purpose. Such fame recalls the playing by dancing dogs of 'Auld Robin Gray' under the windows of Lady Ann Barnard, much to her delight, at a time when that admirable ballad was supposed to be ancient, though indeed then very modern, and there was not the least suspicion that she was the author.

It is amazing how some of our most undying literary works—great nature's stereotypes—were produced without the least forethought of their perpetuity. Shakspeare, Moliere, and other great dramatists seem to have taken no care of their immortal writings but for their temporary representations on the stage. Honest Izaak Walton would be much surprised could he see the present popularity of his 'Complete Angler'; so might

De Foe, John Bunyan, Gilbert White, Goldsmith, and Johnson, at the triumphant success of the 'Pilgrim's Progress,' 'Robinson Crusoe,' the 'Natural History of Selborne,' the 'Vicar of Wakefield,' or 'Rasselas.' Yet all these are little books by great minds, scarcely a volume of them bigger than that of Gulliver's Travels, and all treasures too good for circulating or lending libraries. The original edition of the Selborne, including the antiquities of the place, was a goodly quarto, but soon dwindled to a small pocket volume. 'Robinson Crusoe' was not published before it had long been ineffectually hawked about the trade, and at last accepted by an obscure retail bookseller.

CHAPTER II.

APPRENTICESHIP AND PURSUITS THEN, p. 5—BOTANY AND CORRESPONDENCE THEREON, 5—AT ST. BARTHOLOMEW'S HOSPITAL, 5—CURATOR OF MUSEUM AND PROSECTOR, 6—MR. OWEN'S APPOINTMENT TO THE COLLEGE OF SURGEONS, 6—WILLIAM CLIFT, 6—ADMITTED A MEMBER OF THE COLLEGE OF SURGEONS, 7—JOIN THE ARMY AND SUBSEQUENT STEPS THEREIN, 7—IN CHARGE OF MUSEUM AND SURGICAL DIVISION OF THE HOSPITAL AT FORT PITT, 7—FRIENDSHIP WITH JOHN DAVY—THE 'AMICUS' OF HIS BOOKS ON ANGLING AND OUR LOVE OF THE SPORT, 7—IZAAK WALTON'S FIRST MARRIAGE, 7—EARLY CASE OF CURE OF ANEURYSM BY PRESSURE, 8.

On removal from school, I was apprenticed to Messrs. Jones and Wise, surgeons in extensive practice at Banbury and the neighbourhood; and, after having been for some years domesticated with Mr. and Mrs. Wise, I have ever since retained a grateful sense of their kindness. During that time, though no instruction in science was given me, I received from my masters much useful knowledge in the practical details of the profession; and also devoted my mind zealously to self-culture, and thus contrived to acquire such a knowledge of chemistry, botany, and some other branches of natural history, as has since proved valuable in my professional course. In the preface to my 'Catalogue of Plants in the neighbourhood of Banbury,' 8vo, 1841, the enjoyments of such pursuits then are described, as well as the friendships procured thereby of the late Mr. Purton of Alcester, Mr. Baxter of Oxford, and Mr. Alfred Beesley of Banbury.

It was long afterwards, at Mount Alton, near Dublin, at Walthamstow, Essex, and at Edenbridge, Kent, that I had the advantage of frequent epistolary correspondence with Professor Charles Cardale Babington, and received much valuable assistance from him in the determination of species. And his kindness might be repaid, if he would profit by the new taxonomic characters, especially as regards raphides and cells, revealed in the course of that correspondence. Such studies pursued by me elsewhere are mentioned in chapter VI.

As soon as my apprenticeship ended at Banbury, I went to St. Bartholomew's Hospital, London, and was a 'Dresser' there under Mr. (after-

wards Sir William) Lawrence, and attended the usual course of lectures and hospital practice. Mr. Abernethy and Mr. Stanley lectured on anatomy, the former also on surgery. Messrs. Wormald and Skey were the Demonstrators of anatomy, which office was previously held by Mr. Stanley. At that great school I remained some years, in charge of the anatomical museum, and making the dissections for Abernethy's lectures. The two demonstrators had been apprenticed to him, and they were, at or near the time of their services in the dissecting rooms, the house surgeons of the hospital. Of Wormald's friendship a grateful feeling has ever afterwards been retained by me. I have given a short notice of this excellent man in the obituary record of him, by Mr. Luther Holden, in the tenth volume of 'St. Bartholomew's Hospital Reports.' Mr. Owen was a student at the same time and hospital with me; when Mr. Abernethy asked me if I would like to serve as Museum Assistant, under Mr. Clift and his son, at the College of Surgeons. But as it was emphatically added that no advancement could be expected there, since that was unconditionally reserved for the younger Clift, the kind proposal was declined by me, and it was eagerly accepted by Mr. Owen. These plain facts do not agree with many anonymous and showy paragraphs in the newspapers and elsewhere, of which an example of the latest appears in 'The World,' August 14, 1878. Owen, while assistant in the museum, married old Clift's only daughter. Young Clift died early and unmarried, and so was prematurely lost to that since which he would have adorned.

The father, William Clift (like Opie, the painter), was a poor Cornish boy, and born in 1775, at Burcombe, near Bodmin, in the county of Cornwall, three years before the foundation of the Linnean Society and the death of the great Swedish naturalist, Linnaeus, and died in London, 1849. So we see how, after the death of the two Clifts, Mr. Owen succeeded to the conservatorship of the museum at the College of Surgeons. Mrs. Clift died about six weeks before the death of her husband. Owen had an only child, a son, who is a clerk in the Treasury, married to a niece of Mr. J. Startin, F.R.C.S., and has several children.

Of a man so remarkable as Clift, the cherished friend of Abernethy, it seems strange that we have no worthy biography; and the more so when we consider the prevailing taste for the lives of 'self-made men,' and that Clift's life would include a very interesting and instructive chapter in the history of English anatomy. We should like to see him in correspondence with his friends and in his family circle, and how he lived and moved and had his being; chiefly, no doubt, in his proud sanctuary of the museum. I have sometimes seen him, a somewhat short and fair-complexioned man, busy there, and fancied his face resembled that of John Hunter in Reynolds' portrait. Clift used to complain of the interruptions of his work by visitors; and some of his manuscripts, showing how much he suffered in this way while writing the catalogue, were kindly shown to me by Mr. Stone about the year 1863. In 1792 Clift had been apprenticed, without a fee, to John Hunter, and lived in his house till his death in the following year. So the connection between master and apprentice was but brief. After the transfer of the museum to the College of Surgeons, Clift became, in 1799, the first Conservator, and assisted Sir Everard Home in writing the catalogue of its contents. Clift wrote a beautiful hand, and was an excellent draughtsman, as may be seen in the Philosophical Transactions and in Baron Cuvier's great book on Fossil Remains. Clift had besides some high scientific acquirements. He was a fellow of the Royal Society, served in its Council, and contributed papers to its Transactions, also to the Transactions of the Geological Society. He had the care of the Hunterian Museum immediately after Hunter's death; and for six years was in sad pecuniary poverty and cheerful mental wealth. He was living for a while on seven shillings a week, when the quartern loaf cost two shillings. It struck me

that he had rather a Saxon than Cornish countenance. A portrait of him, painted by Henry Schmidt, is preserved in the rooms of the Royal Society.

On the 2nd of June, 1826, I was admitted a member of the College of Surgeons; but continued thereafter to do my duties in the anatomical rooms and museum at St. Bartholomews' Hospital, until May 17, 1827, on which day I was gazetted Hospital Assistant to the Forces. My subsequent steps in the army were as follows:—June 12, 1828, Assistant-Surgeon to the Forces; July 23, 1829, Assistant-Surgeon to the 71st or Highland Light Infantry Regiment; November 8, 1834, again Assistant Staff-Surgeon at Chatham; September 1, 1837, Assistant-Surgeon to the Royal Horse Guards (Blue); June 2, 1843, Surgeon in this regiment, from which I retired, and finally from the service April 1, 1853.

Soon after my first arrival at Chatham, I was placed in charge of the museun of the Army Medical Department at Fort Pitt. There I made many additions to the collection, and wrote a great part of the catalogue of its contents, and originated a department of experimental physiology. After a course of subordinate duties besides at the General Hospital, the charge of its Surgical Division was assigned to me. Dr. John Davy was then Principal Medical Officer at Chatham; and then and there commenced that long and cherished friendship between him and me, which was kept up regularly and uninterruptedly by personal and epistolary correspondence until his death, and ever afterwards preserved with tender affection in the memory of the survivor. Indeed this intimacy was a cheery part of my life, as may be seen further in Chapter IX. To our common taste for physiological pursuits, we added the love of angling, and often enjoyed this sport together in many parts of England, Ireland, and the borders of Wales. The 'Amicus' of his 'Angler and Friend,' and of his 'Angler in the Lake District' was meant for me. The Prefatory Notes to these two books allude to the circumstances under which we retired from the army, and to the fishing excursions we had enjoyed together. And in his Colloquy IX. of the 'Angler and his Friend.' he refers to my paper on some of the scenes of Walton and Cotton's Complete Angler, published originally in that excellent periodical the Dublin University Magazine; but as I saw no proof of that paper, errors abounded in it, and it is now given with the needful corrections and a few additions in Chapter VIII. My copy of honest Izaak Walton's Angler has such a number of manuscript notes as may further show the interest I have always taken in that charming eclogue.

One of these notes, one only, as having a special biographical interest, may be cited here. We have always read that Walton was by trade a sempster or milliner, and that he was for many years the happy husband of Anne Ken. But he had been married before at Canterbury, and was at that time an ironmonger. Mr. Sheppard, whose researches among the precious historical manuscripts in this city are well known, has found the original marriage licence, and favoured me with a copy of it, from the Diocesan Registry at Canterbury, as follows:—

Walton et Ffloud jurat.

Dios^{n} Regist^{y} Cant.

27 Die Decembris, 1626.

Na. Brent, LL.D., Com. Cant.

Wch day appeared personally Isaack Walton, of the Cittie of London, Ironmonger, a bachelor, of the age of 32 years, or thereabouts, and at his own government and alleageth that he intended to marry with Rachiell Ffloud of the parish of St. Mildred in the Cittie of Cant. Virgine of the age of 19 years or thereabouts the daughter of Mrs. Susan Ffloud of the same psh widow who is

consenting to this intended marriage. And of the truth of the premisses and that he knoweth of no lawful lett or impediment, &c., &c.

Die predicto emenavit licencia matrimonialis Rectore Vicario sue Curate Ecclise predictæ ad solemnizandum matrimonium inter partes predictes Obligantum cum eo Johes Maddock de Civitate London Girdler et Edrus Murton de eadem Civitate Gent in CCli.

IZAAK WALTON.

The above is an authentic copy from the original. I have a faint memory that it was published or noticed in Nichol's magnificent edition of the Complete Angler, but whether correctly or not, having at present no access to that book, I cannot say. In none of the several editions of Walton's Life in my possession is his first trade and marriage mentioned. The brother of his first wife appears to have been that Jo Floud, master of arts, who was author of the first of the Commendatory Verses prefixed to the Complete Angler.

To revert to Fort Pitt. Among my patients there was a man afflicted with aneurysm, interesting as an early, if not the first, case in England of the successful employment of pressure in the cure. What was the ultimate fate of the man has escaped my memory. The following letter to me from Mr. Cæsar Hawkins, ex-president of the London College of Surgeons, will tell the date and some other particulars:—

26, Grosvenor Street, June 29, 1854.

Dear Gulliver,—Presuming that you are interested in the fate of your old patient, it occurs to me that you would like to see a man you operated on for poplitical aneurysm so long ago as 1833, whose case is further interesting from your having cured, by pressure only as he alleges, an inguinal aneurysm on the opposite side in 1835.

If you like to call at St. George's Hospital before Wednesday next, you will find the man, William Murray (of 21, Queen's Road East, Chelsea), in Harris's ward; if it happens to be on Monday at one, or before two, you will find me going round.

I am, Dear Gulliver,
Faithfully yours,
CÆSAR H. HAWKINS.

About the year 1840, Dr. Hutton, of Dublin, revived the practice of Guettaire and others of the cure by pressure of aneurysm. Probably many such cases have been recorded in publications out of my reach.

CHAPTER III.

Still fresh in my memory are the teachers and some of the pupils at St. Bartholomew's Hospital, and the state of anatomy there, as well as at Edinburgh some three or four years afterwards. For Abernethy I always had an affectionate admiration, which was kept alive by his genius and not a few singular and amusing originalities. He had many amiable qualities, and such a large share of humour and pathos as might have made him a great actor. Indeed he often reminded one of Munden; and both in their respectives styles had no followers. In his lectures Abernethy was so pleasant and instructive as to rivet the attention of and make a deep impression on his audience. His eloquence was as remarkable as his jokes and anecdotes. He never rattled away trippingly on the tongue, like many fluent speakers, as if he had learned by rote, but deliberately gave his discourse warm from the brain, as if his words were the slow and steady coinage of his thoughts; and so, as honest Izaak Walton said of the judicious Hooker, "he seemed to study as he spake."

And this Abernethy did with such flexible and apt guise of gesture and face, such alternate solemnity and jocundity—"from grave to gay, from lively to severe"—as to command and fix an interest in subjects that would otherwise appear dry and dull. And so he engaged us admirably. But it would be hopeless to give an adequate description of his original and happy manner; his simplicity and mastery of detail and illustration; his fertility of invention and aptness of quotation; his gentle and animated gesticulation and expression, both in posture and countenance. Nor would it help us much to compare him with other great lecturers, such as Astley Cooper, Charles Bell, Green and Lawrence. Of Abernethy we may truly say, 'Only himself could be his parallel.' He was in the decline of life, a few years from the end of it, when I first saw him, but there was still a sweetness in the modulation and cadence of his voice, commonly rather conversational than oratorical, and in his pauses and emphatic points, his words and their collocation; his expressive eye and arch smile, his sly humour and earnest gravity, had suffered no decay. Such was his versatility of explanation and elucidation that scarcely an organ of the human frame was treated of without an anecdote or story, either of resemblance or contrast.

For example, the aorta was the great trunk of Cheapside, bifurcating in St. Paul's and Newgate Street as the iliac arteries, while the small medium sacral artery, like the little Paternoster Row, was running off between them from the basis of the fork. The supinator or pronator muscle of the radius had its office explained, and its liability to injury from overuse, by the operation of cork-drawing, with the merry case of a waiter at a tavern who had suffered thus after a series of great dinners in the City, and sorely puzzled some of the doctors by his case. The gait or action of different

cripples and of the palsied had histrionic illustrations, often both amusing and instructive. So too of the expression and ludicrously vain attempts to squeak, after the recurrent nerves had been cut, of that most noisy animal the pig. Yet with none of this was he ever vulgar or farcical. An apposite citation from Shakspeare or Moliere, Rabelais or Hudibras, often enlivened the subject. Hence the pupils, getting so much instruction in this agreeable and novel manner, fondly called him "Old Johnny;" and some of them might occasionally be heard talking—"He will be on the brain to-morrow, and will give us a bit of Macbeth or Lear; or on generation, when we shall have a little Dr. Slop and Mr. Shandy, or of the Abbé Spallazani and the seminal animalcules, with an account of the lucky, or rather *un*lucky one that may get into the ovum and become the homunculus. We shall have rare fun too as to how the Abbé became the father of litters of puppies."

Indeed, Abernethy's drolleries were endless, and have been so much published that I shall only mention two or three of them which I witnessed, and which I have not seen in print. To illustrate the odd manner of some men's thoughts, he would cite the Irishman's pig—"A pretty baste that, Pat, and going aisy too; is it to Cork you are driving him?" "Whist! whist! He *thinks* he's going to Killarney!" A rich Jew, somewhere about Whitechapel, ascending his door-steps on a frosty morning, fell with his leg so between the iron rails as to cause a bad compound fracture. After setting it, Abernethy went down to the drawing-room and explained the serious nature of the case to a gorgeous Jewess—apparently the wife—who exclaimed, "Thank God! it is no worse." I saw his face reddening so as to portend an outburst, which was—"No worse! it might have been much better to a man soberly walking into his own house. Egad! ma'am, I suppose you would have been quite as thankful if he had smashed his other leg too!" One day, when he came out to his carriage in Bedford Row, he exploded to his coachman, "Come down! Haven't I discharged you half a dozen times this month, and the last yesterday? Come down, you rascal!" To which the man replied by quietly pointing with his whip to the carriage door, and as calmly adding—"Get in now, or else we shall be too late;" an injunction which was obeyed with no other sign than a puffing of the cheeks.

Abernethy was often wont to make use of the chalk and black-board; sometimes more to our amusement than instruction, especially as regards the then current notion of the termination of arteries in open secerning vessels. But he liked the reality better than representations of it either on paper or board. In his time we had not that profusion of engravings and diagrams from which the present generation of pupils get their first and too often only impressions of surgical anatomy—instead of from nature, in the real parts exposed by careful dissection, as we had to do in the honest pursuit of true knowledge in his days. Had he been flourishing now, he would have been displeased by the multitude of engravings in our elementary books of anatomy to help the bewildered pupil through the injurious and oppressive multiplication of verbal examinations. Much may be learned from such pictorial anatomy how to answer questions and remain ignorant of the subjects. Knox used to sneer, in his caustic way, at what he called 'Anatomy made Easy,' or 'Pocket Anatomy,' which he hinted was patronised by the Messrs. Lizars and other teachers at Edinburgh about the year 1830.

It was remarkable that Abernethy in his lectures eschewed oratorical flourishes, and plunged at once into his subject. He often indulged in pleasing and instructive parentheses, but seldom or never in ceremonial introduction or peroration; so that his conclusion was commonly as abrupt as his beginning. Though his anatomical descriptions were commonly somewhat incomplete, what he expounded was taught thoroughly, and so as to engage his pupils to ponder on it. Hence his lessons were engraven

on their memory, and were true education, not mere instruction or cramming. I have often heard him remark, both in his lectures and private conversation, that jading the memory was not cultivating the mind; that instruction was not to be confounded with education; and, in short, that he always wished young men to be taught how to educate themselves so as develope their faculty of reason. Indeed, he was often wont to enforce on us that we need not expect to realize and secure what he said, much less all that was needful to be learned on the subject, unless we worked truly at it by head and hand for ourselves. He would repeat that he had only shewn us the right way and chief landmarks. His lectures were such as you never see in a book. The contrast between them and the exhausting demonstrations of Stanley was very remarkable. In person Abernethy was somewhat squat, his face fair and rather florid, his hair plentiful and white and his legs somewhat tottering from chronic rheumatism, in 1827. There is a marble bust of him at the College of Surgeons, and his bust and portrait are at St. Bartholomew's Hospital. A part of these notes concerning him appeared in my small addition to Mr. Luther Holden's obituary notice of Wormald in the tenth volume of St. Bartholomew's Hospital Reports.

Lawrence was a very fluent speaker, and often indulged in rhetorical adornments. Unlike Abernethy in this respect, but inferior to him in that true eloquence which at once teaches and persuades; and their views were in essential points as wide apart as the poles. Lawrence continued to the close of his long life an active and powerful member of the College Council, and his eminence was confirmed latterly by his elevation to the baronetcy. He had but little or no genius, if by it we understand the productive or inventive faculty, by which the existing stores of knowledge are extended; but he possessed great talents, if by this term we imply the understanding and capacity for the acquisition and ready use of those stores. In short his was a receptive and not a procreant mind. He had a good knowledge of languages, trained elocution, and an excellent social position. In person he was tall, and handsome both in figure and face; his hair and complexion fair when I first knew him. He was ever very zealous and energetic in all his work. A man of such mental and physical endowments was sure to obtain, and very deservedly, great influence in his profession. But he soon used it in publicly reviling his good old master, friend and host, ridiculing Abernethy's faith, both physiological and religious, and especially his support of Hunter's theory of life against the continental materialists. This onslaught by the young lecturer on his old teacher was still a matter of gossip among the pupils at St. Bartholomew's when I first arrived there. Many of them enjoyed seeing Abernethy made fun of, while more deplored or condemned the conduct of Lawrence. Wormald too, then house surgeon to the hospital, always joined in opinion with the latter pupils, and was wont to illustrate it by sundry covert and amusing mimicries of Lawrence, but I believe remained on good terms with him. Thus beginning, Lawrence soon became somewhat eminent as a radical in the profession, lecturing, spouting at public meetings, attacking orthodox opinions, and writing anonymous things to the same effect; but he ended by becoming an uncompromising Tory, at least in professional matters. It would be dismal work to review his early proceedings, and especially his anonymous articles. The authorship of the most offensive of the latter, which caused much speculation at the time, was divulged when he quarelled with his confederate the editor. All this relates only to the public career of Mr. Lawrence, now become public property. His private life, with which we are not concerned, I have always heard was eminently respectable.

His lectures on the Natural History of Man, published in 1819, have now sunk into oblivion, though they were very popular for a while. They must have been highly distasteful to his old master Abernethy, and were

diametrically opposed to John Hunter's teaching; they were pirated by the low publishers of the day, and when the author applied for protection or redress to the Lord Chancellor, Eldon, it was peremptorily refused, in consequence of the character of the lectures. Their style was excellent, but they were destitute of original matter. They were mere compilations, chiefly from continental writers, such as the French encyclopedists, though this was not at first sufficiently acknowledged. Afterwards, however, when the principles were fiercely assailed, it was set forth in the lecturer's defence that he had only given what had been long before promulgated by other and more eminent physiologists; and on the discountenance of his published opinions by the governors or other authorities of a great institution—I think Bethlem Hospital—to which he was a medical officer, he so retracted or recanted as to keep his situation, the tenure of which would otherwise have been in danger.

Still for some years afterwards he was an active and avowed advocate for reform in the profession, ready to destroy but unable to reconstruct; an example of which appeared in a pamphlet of 140 pages, entitled—"A Corrected Report of the Speeches delivered by Mr. Lawrence, as Chairman of two Meetings of the Members of the Royal College of Surgeons, held at the Freemason's Tavern, with an Appendix," published by Callow and Wilson, 1826. This pamphlet is now very scarce; but I have seen a copy of it, presented by the author to the late Mr. Liston, and perhaps this may be preserved in the curious collection of ana possessed by Mr. Stone, at the College of Surgeons.

But for all that, Lawrence became and remained during the latter part of his career a stanch Conservative in professional matters. He was the skilful chief and whip of the hospital confederacy in the College Council; the sun around which his small satellites revolved with implicit obedience. It was amusing to see how both old and young among them were wont to be pleased with his sly and humorous hits at "new lights" and "wiseacres" in modern politics, and "seeing through a millstone, through a glass darkly," and so forth, in modern physiology. To him and his disciples the microscope, like a red rag to a bull, was sorely aggravating. A mere intelligent bystander might have imagined that they had all been asleep since the time of the Hunterians, Cooper and Abernethy. Among the old members of the Council, I remember only Green and Swan who had a just regard for modern physiology. Brodie never turned it into ridicule; but I have heard him assert that Cruickshank was a greater genius than Hewson. Indeed this pleasant delusion was formerly rather common. Sir Astley Cooper more than once remarked to me that Hewson was generally considered "a conceited fellow with nothing in him." Such is the penalty of being, like Hewson, so much in advance of the knowledge of the age as to produce but little effect upon it.

During my pupilage at St. Bartholomew's, the anatomy taught there, and at the other hospital schools in London, was little more than surgical and teleological, with the current physiology. Richard Grainger and Joshua Brooks, private teachers, the former in the Borough, and the latter near or in Great Marlborough Street, had in some respects more merit. A marble bust of Grainger is at the College of Surgeons. The hospital lectures treated first of structure, then of its functions, and thirdly of those deviations from either that constitute disease or disorder. Abernethy defined disease as deranged structure, disorder as deranged function merely. He always recognised final causes and the work of God. In anatomy the treatises of Meckel and Cloquet, imported from the Continent, were the great authorities, directly or indirectly; Bichat and Beclard were beginning to have some influence on us; but Oken, Geoffrey Saint Hilaire, and others of their school shone only in fitful gleams; while the sort of anthropotomy just mentioned reigned supreme, and transcendental or philosophical

anatomy was either unknown or neglected. Histology was a word not then invented, and the vast field of minute anatomy was little cultivated. The cause of teleology was soon to be extended and levelled to the meanest capacity by the publication of the Bridgewater treatises. All this is the more remarkable, because the hospital lecturers were ever expressing their reverence for John Hunter, yet all the while ignorant of the comprehensive scope of his mind and significance of his researches. Abernethy was somewhat in advance of the other hospital lecturers. He knew a little more.

In short, to the great teachers of the metropolitan hospitals, the Sphenoid or Temporal was just a bone with certain expansions and processes and foramina for the support or protection of soft parts and passage of nerves and blood-vessels. The simplicity of Peter Bell was scarcely more remarkable than that of those great lecturers, who took so little interest in the progressive changes and past history of their science:—

> " In vain through every changeful year,
> Did Nature lead him as before;
> A primrose by the river's brim
> A yellow primrose was to him,
> And it was nothing more."

But anatomy was at the same time far more advanced at Edinburgh, where, as described in Chapter IV., the genius of John Barclay and Robert Knox was still prevailing, to be succeeded not long afterwards by the excellent John Goodsir and William Sharpey.

As to physiological history, it was, and still is in many parts of it, a mere chaos; the writers on the subject seldom drinking at the pure and original founts, but too often dabbling in the muddy streams of compilers and sciolists. The metropolitan hospital lecturers were in blissful ignorance of the subject. What was it to them who discovered the fundamental principles of their art? It was in the practice and teaching of it that they were engaged. And so far they were eminently useful and excellent men, and deserve the reverence of posterity. I shall never forget remarking, in Abernethy's hearing, when Wormald and Skey were present, on Hewson's knowledge as shown in his 'Experimental Inquiries.' Abernethy asked what John Hunter taught to the point, and I was the object of derisive smiles from all three. Even such a noble subject as the history of the proximate parts of the blood was involved in gross error, and the question concerning its life, as mentioned in Chapter XIII., remained in sad confusion. When will biological history be undertaken with that honest and able zeal which has been so long given to other branches of science?

Amazing it should have been, but a matter of course it was, to hear Abernethy and the other lecturers teaching, in all the complacency of error, that John Hunter was the discoverer of the spontaneously coagulable principle of the blood. But it was truly surprising to see this fallacy endorsed long afterwards by other eminent physiologists. Professor Owen even went so far as to detail the particular steps by which, as he maintains, Hunter made this discovery; and that also of the paleness of the blood, known before Hunter's time, of the early embryo of vertebrates. Still later, to make confusion worse confounded, the continental physiologists claimed as their own the discovery of the coaguable part of the blood; nay, the illustrious Johannes Müller deliberately published what he considered as experimental proofs that he had himself discovered it. All this is explained more fully in the Introduction and Notes to the Sydenham Society's Edition of Hewson's Works.

Baron Larrey, the celebrated military surgeon of the great Napoleon, visited London while I was at St. Bartholomew's. Larrey was a lion to the hospital pupils, and sometimes more amusing than instructive to them. At Guy's they witnessed, with much tittering, his arrival and reception, when

he, a somewhat squat person with a fleshy nose and brown sallow face, rushed forward, rose on tiptoe, and warmly embraced and kissed tall and portly Sir Astley Cooper. Whereupon the great baronet remarked, "Well, I have the advantage of the Baron, for when I visited him at his hotel this morning I kissed his daughter." The merriment thus caused was not confined to the pupils. In the great room or staircase at St. Bartholomew's, the Baron much admired the large paintings of the Pool of Bethesda and the Good Samaritan. Standing before one of these, after he had examined them both, he seemed to have made a discovery. Authoritatively waving his hand before the last painting he saw, with all the air of displaying at once his taste and knowledge, he exclaimed, "C'est d'apres David." We then thought that Larrey was not such a great authority in painting as in surgery; for some of us knew that the French David was not born when our English Hogarth was at work on those pictures.

About this time Johannes Müller and his friend Henle were both together in London, and visited St. Bartholomew's, as did also Dr. Spurzheim. With the former two Kiernan and Lawrence went about the museum and hospital wards, and Wormald, Wootten, and I followed them. Müller was somewhat short and stout, with a large head and fair hair, and a cheerful teutonic countenance. Henle was also short, but his person was spare, his head small, hair dark, and he had a sharp celtic expression of features. Thus there was a remarkable contrast in the physical appearance of two Germans alike eminent in anatomical science. Spurzheim was very tall and robust, his frame well fitted to be made a lifeguardsman of; his head was large, his face was somewhat square and solemn. He was much interested by the skull of the notorious murderer Thurtell, and gave us a phrenological discourse thereon, dwelling strongly on the "frightful development of the organ of destruction" in that cranium. Whereupon Mr. Abernethy, assisted by Mr. Wormald, took the callipers and measured his own skull and Wormald's, when it was plainly shown that the organ of destructiveness was larger in them than in Thurtell's. It having been suggested that the comparison was hardly fair, because the measurements of the living head were increased by the integuments, Thurtell's organ of benevolence was pointed out as singularly large in the bare skull. Spurzheim then alleged something about controlling or compensating developments. Abernethy smiled gravely. Wormald smirked comically, and others had their faith somewhat diminished in craniology. It seemed odd that, as regards nervous matter, the quality as well as the quantity was not considered. The retina is as powerful in the small hawk as in the large ox; some minute invertebrates may have a more potent olfactory sense than that possessed by big vertebrates; and this faculty is surely as strong, within its compass, in many tiny as in several huge mammalia.

Of the pupils best known by me at St. Bartholomew's, some have since risen to eminence. Among these there are a few with whom my acquaintance was but slight. In my time, there were Sir George Burroughs, Sir Thomas Watson, Dr. John Wootten, Dr. Wise, Mr. Francis Kiernnan, Dr. Jonathan Periera. With Wootten and Kiernan I enjoyed a friendship only closed by their deaths. Burroughs became masterly in speech and in the higher faculty of medical administration. Watson's excellent career is well known. Wise pursued an honourable course in the Indian medical service. Wootten, who had a mind and benevolence as large as his ample bodily stature, too early died while in practice as a leading physician at Oxford. Kiernan, a quiet and sensible person, was a 'Dresser' with me at St. Bartholomew's; his researches on the intimate structure of the liver have gained him a high reputation in anatomy. Periera became the famous pharmacologist. Sir James Paget, commencing his distinguished career somewhat later at St. Bartholomew's, has since been diverted, like Brodie

before him, from the charms of physiology to the profits of surgery. Humphrey and Rolleston, the excellent representatives of physiology at Cambridge and Oxford, were a little later still at St. Bartholomew's. Savory, now an excellent physiologist, was studying there much after my time. Still more before it, Christison, who lived to be very old and distinguished at Edinburgh, was a student at St. Bartholomew's. All the forementioned men were personally known to me, except my good friend Dr. Rolleston, with whom I became acquainted through his father-in-law, Dr. Davy, and have held an agreeable epistolary correspondence since. Well known personally to me were many others in London, during my military service there, who had no connexion with St. Bartholomew's.

Among them were Dr. Richard Bright, Dr. Marshall Hall, Dr. Robert Grant, Dr. J. E. Gray, Dr. Benjamin Guy Babington, Mr. Alexander Nasmyth, Dr. Gideon Mantell, Dr. Robert Lee, Mr. Robert Liston, Mr. Joseph Henry Green, Sir Benjamin Brodie, Sir Astley Cooper, Dr. William Sharpey, Dr. Benjamin Carpenter, Mr. George Newport, Dr. Charles J. B. Williams, Dr. Robert Boyd, Mr. Wharton Jones, Mr. William Bowman, Mr. John Dalrymple, Dr. Robert B. Todd, Dr. Lionel Beale, Mr. Nathaniel Bagshaw Ward, Dr. Robert Willis, Mr. Joseph Hodgson, Dr. Thomas Hodgkin, Mr. Thomas Bell, Mr. Joseph Jackson Listor, Mr. Andrew Ross, Dr. James Scott Bowerbank, Mr. William Yarrell, Mr. William Spence, Mr. Edward Jesse, Mr. William Ogilby. The last seven were not medical men, but they were well known to science. With the whole of them I had a more or less friendly acquaintance. They occur to me for identification as follows:—

Bright was in person about the middle size; in mind far above the average, as will evermore be known by his valuable contribution to the pathology of the kidney. His Gulstonian Lectures were very good. He was a pleasant and instructive companion.

Hall will long be remembered for his discovery of the lymphatic heart in the tail of the eel, and would have rejoiced in the recent extension of the numerous observations on this subject to so many other animals. His experimental researches which followed those of Prochaska, on the reflex function of the spinal cord, are well known and esteemed, and have been severely criticised by Lewes and others.

Grant, a middle-sized person with a fair complexion, had much gentleness and humility of manner, and more enthusiasm in zoology. He was a good lecturer, and was wont to rejoice in the Sponges and other of the lowest organisms generally, in Grantia compressa particularly, which was dedicated to him in well deserved compliment to his researches. He was indignant at the exclusion of the order of Sponges from the great Dutch Zoology which was translated and has become the best text-book on the subject in England. He always maintained, after some Continental pundits, that every cell in the fluids and solids is really a distinct animal; he would get warm on the subject if you asked him whether every hair of our skin was a congeries of genera or species of distinct living creatures, and was wrath at the treatment of this question in my eleventh College Lecture, at which he happened to be present. It was reported in the 'Medical Times and Gazette,' Feb. 14, 1863. He would have exulted in the doctrine, very recently announced by Haeckel, of a 'cell-soul and cell-psychology'; though it seems hard to understand how these eminent physiologists could reconcile such a view with their unqualified acceptance of materialism and rejection of the reality of vital phenomena. Has the German at last adopted the English teaching of John Hunter and Lionel Beale? Aristotle, and Harvey too, maintained that the ovum, whether of an animal or a vegetable, is possessed of a 'soul.'

Gray's portrait, by Mrs. Carpenter, may be seen at the Royal Society. He was in person about the middle size and rather stout, his hair fair. He

adopted zoology as a profession, and was for many years chief of this department in the British Museum. Latterly he became partially paralysed and had to be wheeled about in a chair. He was too much prone to the multiplication of zoological families or species and names. But some of his distinctions were good. His division of the single Linnean genus Equus into two sections has since been generally accepted by naturalists, so that they all now recognise the four warts on the legs of horses and the two only in the asses, added to other differences, as good generic characters. In his paper on this subject, published in the Zoological Journal, 1825, a little mild merriment was excited by the section headed '*Asinus*, GRAY.' In botany too he was concerned in, if not the author of, a 'Natural Arrangement of British Plants,' in which the fault of needless distinctions is remarkable; but the work had the great merit of being the first on this important plan in England. It appeared in 1821 with the name of Samuel Gray as the author. The amiable wife of J. E. Gray too was fond of natural history, especially conchology.

BABINGTON had dark hair, with a tall, spare, and comely person and pleasing manner. To him we owe the good term liquor sanguinis, and valuable observations on some of its properties. He promoted the Sydenham Society's edition of Hewson's Works, well appreciating the excellence of the researches therein on the blood.

NASMYTH was an eminent practical dentist in George Street, Hanover Square. He had a fair complexion and hair, with a person quite up to the middle size; his valuable observations on the minute structure of the teeth are noticed in chapter VI., and ought to be recognised, though they are commonly ignored, in systematic books on the subject. He kept a lady artist employed in his house to make drawings of his microscopical preparations.

MANTELL, whose portrait, painted by J. J. Masquerier, may be seen at the Royal Society, is well known by his published works on geology and palaeontology, which were so excellent as to provoke jealous and anonymous criticism and covert and overt obstruction by an eminent rival. On these matters Mantell would sometimes complain mildly in conversation; and in his writings more forcibly, especially on the ungenerous impediments which had been thrown in his way during his researches. The Royal Medal was awarded to him for his memoir 'On the Structure of the Jaws and Teeth of the Iguanodon,' published in the Philosophical Transactions of 1848. He was tall in person, gentle and amiable in manner, with a suffering expression of countenance, connected with chronic disease in the lumbar part of the spine.

LEE was the great metropolitan practitioner in midwifery, and still greater in certain departments of neurotomy. It was amusing and instructive to see him at work, in the early mornings at Savile Row, on the nerves of the uterus and heart, and his enthusiasm when he showed you how the size of the nervous ganglia and cords increased with the size of the organs supplied therewith. His dissections and the treatment they met with at the Royal Society are mentioned in Chapter VI.

LISTON had a fine face, shown in the marble bust at the College of Surgeons. In figure he was tall and handsome; in deportment, like Green, gentle and pleasant. Liston was among the greatest, if not the first, of the practical surgeons of his day. He was fond of the dramatic society, and of the diversions of fox-hunting and yachting.

GREEN was still more portly and tall, and had also an agreeable suavity of manner. He had fair hair and a pleasant countenance, and was an excellent speaker. My acquaintance with him was mostly confined to the meetings of the College Council. He is further mentioned in Chapters XIV. and XV.

BRODIE was rather below the middle stature, a sharp man with dark

hair, eyes somewhat small, and a shrewd expression of countenance. He had much activity in his movements and mind, and wrote occasional articles in the Reviews on the state of the profession. He did not excel as a speaker; but was much patronized by Prince Albert, and indeed was often adviser of the Court in professional matters. Brodie is further mentioned in Chapter XV.

COOPER, a tall and portly man, spoke fluently in a round sonorous voice, and was regarded as a very courtly person. He had many anecdotes and was a good story-teller, as described in Chapter V. He and Green quarrelled about the possession of the anatomical museum at the Borough, and Green gave an account of the business in a pamphlet which was damaging to Cooper.

SHARPEY had a tall and handsome person, inclining latterly to corpulence. He was eminent in investigations of vibratile cilia, echinoderms, and the perforating fibres of bone. He was the first great lecturer in London on what was then called physiological anatomy; and assisted in rejecting the German nonsense concerning the history of our knowledge of coagulable lymph of the blood, and in forwarding accordingly the Sydenham Society's edition of Hewson's works. Sharpey was an agreeable speaker and fond of pleasantries after dinner. He was attached to no hospital, neither did he follow the commercial branch of his profession; so no wonder that he accepted, in 1874, a pitiful annual pension, far below his merit, of £150, from a Liberal Government, thus proving its economy!

CARPENTER was a tall man, clever in mind, much devoted to microscopic things generally and to Foraminifera and Eozoon particularly, and somewhat prone to controversy as regards spiritualism and the baneful effects of fermented liquors. On this last point see Chapter X. His name has become so widely published that, according to Mr. Mozeley, even the poll-parrot aboard the 'Challenger' was wont to exclaim—"Ah, Dr. Carpenter, F.R.S." He is also well known for his excursions on the borders of Physical Causation and Mental Causation, reminding one of Pope's couplet,—

> Physic of metaphysic begs defence,
> And metaphysic calls for aid on sense.

NEWPORT, a Canterbury man, was short in person, and probably the best entomotomist of his day. He was the discoverer of the penetration of spermatozoa into the batrachian ovum.

WILLIAMS, a little man with a large mind and fair hair, was great in pathology, especially as regards pulmonary consumption and other diseases in the chest; his experimental researches on the sounds of the heart were early and important, some of which (to which I was an eye witness) were made on donkeys. He was one of the best practical physicians of his time, a generous and amiable man, whose friendship I long enjoyed, and with whom I was associated in kindred pursuits at the dead-house of the St. Marylebone Infirmary, referred to in Chapter V.

BOYD was resident physician at that infirmary, and latterly for many years the excellent medical superintendent of the Somerset Lunatic Asylum, near Wells. He had much knowledge, derived from original researches of the brain and other organs, and of vital statistics. Some of his observations are noticed in Chapter IV. Of late years he became rather stout; he was of middle stature, had fair hair, and exercised a genial hospitality. His practice, after his retirement from the Somerset Asylum, has been chiefly in mental diseases in London.

JONES is a precise and spare little man, with a large mind; he has dark hair. His researches were excellent on the rythmical contractility of the minute veins; on the red blood-corpuscle in its different phases of development; on the amœboid changes of form in the white corpuscles;

and on the lymphatic hearts of batrachians. He practised chiefly as an ophthalmic surgeon.

BOWMAN practised more extensively in the same line. His observations were admirable on the Malphigian bodies and other parts of the minute anatomy of the kidney; on fatty liver; on the ciliary muscle; and on the structure of voluntary muscle, including his original discovery and demonstration of the sarcolemma. Indeed his researches, and those of Lionel Beale and Wharton Jones, stood and still stand among the most valuable, in their respective departments, that were made while I was actively at work, with far less success, on kindred investigations. Bowman had dark hair, and, like Babington, a tall and spare person.

DALRYMPLE was also an eminent ophthalmic surgeon. He made excellent observations on some of the Rotatoria, and on the vasa lutea of the bird's egg; his health was always weak, his mind and manner cordial and humorous, his person of middle size, and his hair fair. There is a marble bust of him at the College of Surgeons.

TODD was the excellent editor of the great Cyclopædia of Anatomy. Like his father, the eminent Dublin surgeon, he was somewhat short in stature, but the son was not so short and stout as the father. The association of Todd and Bowman in the treatise on human physiology is well known.

BEALE is rather small in person, but large in mind and goodness, and is happily spared to be, like John Hunter, a most powerful advocate of the reality of vital phenomena,—that life is the source and not the result of organization. His valuable investigations concerning germinal matter, on nerve-ganglia, on the origin and termination of nerve fibres, and on the biliary ducts, could only have been made by one of the best histologists of the age. He was the first to employ the deepest objectives then made by Powell and Leland.

WARD was a genial man, of middle size and fair hair. He had an excellent taste for botany, well displayed in his garden at the Ferns, Clapham Rise. He was the inventor of closed cases for the growth and preservation of plants, and he held high office in the Apothecaries' Company.

WILLIS was for many years librarian to the College of Surgeons, and a physician practising in Dover Street. He succeeded Dr. Scott in general practice at Barnes, and resided there for the remainder of his life. Willis translated Hervey's Works for the Sydenham Society, and Wagner's Physiology for the public. To this last book I gave a few notes and drawings, which were published therein. Willis was fond of German literature, and has given us a Life of Spinoza, a translation of Lessing's Nathan the Wise, and a volume on Servetus and Calvin.

HODGSON, a gentle and kind man, was author of the valuable book on diseases of the blood-vessels.

HODGKIN was small in person, but with great benevolence of mind; and, having married an amiable and portly widow, in the decline of his life, he became known to some witlings as the 'widow's mite.' He excelled in morbid anatomy, especially as regards serous cysts and membranes. To him we owe the English version of Edwards's excellent book on "The Influence of Physical Agents on Life;' and 'Hodgkin's Disease,' since known as Lymphadenoma, is a peculiar one of the lymphatic system, lately proposed as the subject for the Jacksonian prize at the College of Surgeons.

BELL, when I first knew him, was an eminent dentist practising in the City, and lecturing on the science of his profession at Guy's Hospital. He was afterwards Professor of Zoology at King's College. His Works on the 'Anatomy and Diseases of the Teeth,' on 'British Quadrupeds' and 'British Reptiles,' are well known. He was for some time a secretary of

the Royal Society, where, and at the meetings of the Zoological Society, I had often the advantage of intercourse with him. He gave up his professional position and scientific appointments some years ago, and retired to Selborne, where he lives in the very house, called the Wakes, which was the property and residence of the famous Gilbert White, and which is noticed further on Chapter XVIII. Bell bought the place of the great-nieces of White, and was an excellent successor to the illustrious naturalist. In person Bell is rather short and stout, with a fair complexion. He must be some ten years my senior. His manner is precise, gentle, and agreeable. He was sometime editor of the 'Zoological Journal.'

LISTER, like Hodgkin, was a member of the Society of Friends, and was a wine merchant in the City, when I used to see him at Tokenhouse Yard. He had a profound knowledge of microscopic objectives, and made important discoveries in some branches of optics. He and Hodgkin were great friends, and through their kind offices Andrew Ross made object-glasses for me.—ROSS gave practical effect to Lister's researches, was of middle stature and rather stout, with fair hair, and had a generous and cultivated mind. He was living and working in an attic at Clerkenwell Square when I was first taken to him by Lister. Further mention of Ross is made in Chapter VI.

BOWERBANK, whose Evenings are noticed in the same Chapter, was latterly a tall and handsome octogenarian. I often saw him, after his retirement to St. Leonard's-on-Sea. The motto on his seal was 'Prudentia et Scientia,' which some sorry blades interpreted 'Spirit and Sponge,' in allusion to his profitable business as a distiller and his devotion to the Spongiadæ.—YARRELL is but poorly represented by his marble bust at the Linnæan Society; he was a short man, deservedly much respected, and had an elegant knowledge of various branches of zoology; he was by trade a newsvender in Rider Street, St. James's.—SPENCE was in person somewhat below the middle size; he and Kirby were the authors of the excellent 'Introduction to Entomology.'—JESSE, a tall man, with a light complexion, held some place connected with the Royal Parks. He liked a rubber at whist, and outdoor zoology. His series of 'Gleanings in Natural History,' faint echos of Gilbert White, were deservedly esteemed in their day, and are still read with pleasure. I knew him most at Windsor, where he and I had many a ride together through the Great Park and Forest, and sometimes as far as Wokingham and Hampton Court; he is further mentioned in Chapter XVIII.—OGILBY was of middle stature and had darkish hair. He was by profession a barrister, but devoted much time to zoology, especially in descriptions of the hollow-horned ruminants; and for many years was the honorary secretary of the Zoological Society, and probably a better secretary that society never had; anyhow, one or more of his amply-paid successors proved too often comparatively inefficient. He had landed property in Ireland, whither he went, leaving London permanently, during the great famine in that Island. He was a remarkably intelligent and amiable person.

CHAPTER IV.

PHYSIOLOGICAL PURSUITS AT CHATHAM, p. 20—BLOOD, LYMPH, CHYLE, SOFTENING OF FIBRIN, TUBERCLE, FRACTURES OF THE PATELLA, SHORTENING OF THE CERVIX FEMORIS, NECROSIS, UNION OF DEAD WITH LIVING BONE, BLOOD CLOTS IN SCURVY, 20—21—APPOINTED TO THE 71ST REGIMENT, 21—AT EDINBURGH; EMINENT MEN THERE, 22—DR. KNOX, 22—HIS ANATOMY, LARGE CLASS, PERSON AND MANNERS, 22—24—THE CURSE OF SCOTLAND, 23—SIR HUMPHRY DAVY AND DR. PARIS, 23—KNOX'S BOOK ON FISHING, 24—MY LAST MEETING WITH HIM, 24—BURKING AND BODY-SNATCHING, 25—MY VISIT TO NORTH AMERICA—ALEXANDER WILSON, LAWSON, DR. BUSHE, 25.

At Chatham my attention was most engaged in experimental physiology, and in the prosecution of those researches in pathological anatomy, and on the blood, lymph, and chyle, which were ever favorite subjects with me. Then began those examinations of the blood-corpuscles which I afterwards so much extended in the great menagerie of the Zoological Society of London. But at Chatham were nearly completed those many experiments and observations by which I discovered the essential difference between two morbid states always previously confounded, viz., suppuration and the softening of fibrin, demonstrating this last to be an elementary and distinct disease which had no relation to pus. Long afterwards this view was promulgated as a new discovery in Germany by Virchow, who called this disease Thrombosis, and confirmed and extended my views, which have now become incorporated with pathological science. On this German pathologist see further in Chapter XVI. At Chatham too were made those extensive investigations by which I named and demonstrated the molecular base or chief morphological element of the chyle; the true nature of tubercle; the precise conditions of union or non-union of fractures of the patella, and of the cervix femoris within the joint; proofs of the shortening of the neck of the femur independently of fracture in young subjects; experiments on the absorption of the sequestrum in necrosis; proofs that living bone will unite with foreign dead bone, contrary to Mr. Hunter's hypothesis.

Some of these investigations employed much time and work. Those concerning the chyle, which were completed at the Regent's Park Barracks, were very extensive and protracted, and by no means merely peeping through a microscope. Besides feeding numerous dogs and cats to get the chyle in the different stages of its formation, every opportunity was taken of examining it in the animals that died at the Zoological Gardens, and in the human subject as often as could be. A large number of these experiments were made with the assistance of my friend, good old Mr. Siddall, the able and zealous veterinary surgeon of the Blues, who took an intelligent interest in the subject. Seasons passed before I could get perfect satisfaction as to the reality of the molecular base. It would often appear, under Andrew Ross's one-eighth objective, only like a mere cloudiness, so that a very nice management of light and focus was necessary to get a plain view and resolution of the object. And then the question would arise whe-

ther it was not rather accidental than essential; and hence the need of more experiments. But at last the truth was plainly established, and has since been universally accepted. Dr. Hughes Bennett, after many observations, made it a central point in his doctrine of molecular physiology. My original figures, in the Appendix to Gerber's Anatomy, are the best I have seen of the molecular base; the woodcut of it in the Notes to Willis's Translation of Wagner's Physiology is not bad: the figures in Carpenter's great work, copies of those in my College Lectures, are too dark and course.

Preparations showing the above-mentioned facts, excepting those regarding the chyle and some of tubercle, were placed and described by me in the museum at Fort Pitt; as also were specimens of thick layers of blood-clots beneath the skin and between the muscles in cases of scurvy; many examples of atrophy, hypertrophy, and softening of articular cartilages; central softening of clots of fibrin in the heart and veins. The remarkable blood-clots in scurvy were then, if not now, unknown, though more or less extravasation of blood in that disease has long been familiar to pathologists. The puruloid matter in the fibrinous clots in the heart had always before been regarded as true pus; and especially by Mr. Hunter, who adduced the central softening as proof of the life of the fibrin, because if it be not alive, he asked, how could it secrete pus? But, as already remarked, my experiments originally proved that this matter is merely softened fibrin, which has nothing to do with suppuration.

And indeed several of my experiments were at variance with a few of the views entertained by this illustrious man. The union of dead with living bone, cited above, disproved the doctrine, which he had maintained, that his successful engrafting on living parts of teeth and cocks' spurs was a valid testimony of their life, since he held that living parts would not accept of union with the dead. And the facts noted in Chapter V. are quite irreconcileable with the opinion, which he firmly held, that the blood and muscles of animals hunted to death will not coagulate or stiffen.

Shortening of the neck of the thigh-bone which has never been broken, in early and middle age, is important in practice. This was signally proved in the case of a gentleman, aged 35, who fell on his hip and was carried to bed, where he remained for five days, and was attended by Mr. Pettigrew and Mr. Howship, both of whom agreed that the injury was no more than a bruise. Accordingly the patient got up and hobbled about up and down stairs and in his garden, and steadily but slowly improved till he could walk two or three miles easily. But he had sometimes dull pains in the hurt hip, especially when he walked too much; and these pains continued and increased so much six months from the accident, that in another half year he became very lame, and consulted Sir Benjamin Brodie just fifteen months from the receipt of the injury. This eminent surgeon, after careful examination, found that the limb was shortened at least three quarters of an inch, and declared that the neck of the thigh-bone must have been fractured. In this opinion Sir Astley Cooper concurred. Whereupon the the patient became wrath with his first two surgeons, and determined to prosecute them for negligence or ignorance. Before doing so, seeking further advice, he consulted Mr. Liston, who called me in, when we decided that there was certainly shortening of the limb, which had probably taken place quite independent of fracture, and the patient had no ground for action against the surgeons who had been originally employed. This case has never been published. I knew of another like it in a cavalry officer, and have published dissections of more.

From Chatham I was removed in the summer of 1829 to the 71st Regi- Regiment, and served as assistant-surgeon in that corps in Scotland and Bermuda. While quartered at Berwick-on-Tweed, Edinburgh, Perth, and Dundee, I met with many congenial minds, and continued my anatomical

researches, both zoological and botanical, interrupted only by regimental duties, angling and other amusements. In the Scottish metropolis I became well acquainted with Liston, Syme, and Knox; and the acquaintance thus begun ripened into a life-long friendship with the first-named great surgeon. The witty and learned John Barclay had passed away, but the rich legacy of his anatomical teaching yet remained; and his excellent book on 'Life and Organization' might still be profitably read by many modern biologists. Alison stood unrivalled in the institutes of medicine, and Abercombie, John Thomson, and Christiom were flourishing, while Craigie was editing with great learning and skill the old quarterly 'Edinburgh Medical and Surgical Journal.' But above all in anatomy at the Edinburgh school was Robert Knox; and it is noteworthy that he and his eminent predecessor, Dr. Barclay, and their excellent successor, Dr. Sharpey, were not hospital-surgeons, nor do I think that they held any appointment in the University.

John Wilson, in person tall, stalwart, fair-haired, and handsome, detested Knox, and was eloquently lecturing on moral philosophy in the University, and much quoting Coleridge. Sir William Hamilton, professor of logic and metaphysics, a lawyer, divine, and bibliopolist, happy too in a wife who helped in his literary work, had been and still was engaged in his researches on the size and weight of the brain. They have been so strangely neglected, considering their interest, that they are ignored even in the seventh edition of Carpenter's great work on physiology; and the same is true of the extensive observations on the like subject by Dr. Robert Boyd, in the *Philosophical Transactions*, 1861, and in a Note at the end of Willis's Transactions of Wagner's Physiology, and several other papers. Hamilton's observations, if I remember rightly, are noticed in *Monro's Anatomy*, 1831, *Medical Times*, 1845, and in Veitch's *Memoir of Hamilton*, Edin., 1869. Combe was the great apostle of phrenology at Edinburgh. Hamilton's observations were much in opposition to that then fashionable doctrine. According to his observations, the human brain acquires its full size and weight so early as the seventh year, and its specific gravity varies little, if at all, throughout life; while the cerebellum is larger in proportion to the cerebrum in the female than in the male, and larger also in proportion to the brain proper than in many quadrupeds and birds. He used to measure the capacity of sculls by means of sand or millet-seed. Boyd's observations on the weight of the brain were far more extensive and in concord with phrenology. His results proved that the brain slightly increases in weight up to the twentieth year, and afterwards as slightly diminishes; although in men there is a small increase between the ages of thirty and and forty. He discovered further that the left hemisphere is commonly rather larger and heavier than the right, especially in epileptics. During Hamilton's time, Boyd graduated M.D. at Edinburgh.

Of course, I soon made my way to and was often at Knox's dissecting rooms, and saw there the largest class then known, not excepting even Mr. Abernethy's and Sir Astley Cooper's in their most palmy days. The state of anatomy in London has already been noticed in Chapter III. I was much struck with the novelty and excellence of the lectures by Knox, who was then at Edinburgh, zealously broaching the doctrine of Bichat and Beclard; and for the first time in Britain, during the regular students' course, earnestly teaching those views, called transcendental or philosophical anatomy, of Oken, Geoffroy Saint Hilaire, and others, the significance of which was either unknown to or neglected by the teachers at the hospitals in London. Yet there flourished at that time Sir Astley Cooper, Abernethy, Lawrence, and Charles Bell. As all these four eminent men, when they wandered into comparative anatomy, treated it mainly in a teleological point of view, the philosophical expositions of Knox were new and instructive to me. He would often take a sly fling at Paley and the school of

natural theology, and was afterwards still more excited against it by the Bridgewater treatises. I never attended any of Green's lectures at the Borough, but they might, judging from those which he gave at the College of Surgeons, have been somewhat in advance of the lectures by other hospital surgeons in London.

Knox was very courteous and polite in manner. He disliked roistering men in general, and those 'gents' in particular who are wont to call their most cherished cronies 'bricks.' He pretended, I believe justly, to an elegant taste in the fine arts. In person he was slightly below the middle height, with full chest and shoulders and a comely muscular frame. His head was bald, his face much seamed and his left eye quite destroyed by small pox. In his dress, with a garish silk waistcoat and a festoon of jewellery in front, besides a brilliant ring on his forefinger, he appeared like an inflated and decaying beau, got up in spite of his disfigured countenance. Thus he reminded one of John Wilkes, and the more so as Knox, like that notorious demagogue, had the reputation of being proud of his influence with the fair sex. When Knox entered his lecture-room or theatre, he protruded his chest, straightened his knees, and raised his shoulders, and so strutted forwards, with a conceited air, as to seem vain, if not ridiculous. But the suavity of his voice and eloquence soon gained upon you; and as he warmed with his subject in a sweet succession of appropriate words, you began to see that he was no common lecturer; and to be enamoured with his discourse. When most emphatic he would rise on tiptoe and show a complacent expression of countenance. But, like Swift and Pope and Fontenelle, he seldom if ever laughed, and more often sneered than smiled; and he had a grim look when he delivered himself of a precept. Indeed he was too often wont to indulge in cynical expressions about persons and things, useless to his audience, and more hurtful to himself than to the subjects of his scoffing.

At a scientific meeting, where he was disliked or opposed by a party, one of them spoke from a seat behind him, when he pointed backwards with his thumb over his shoulder, and simply exclaimed, "Another of the clique!" After a long discussion at the Antiquarian Society, on the origin of the words, "The curse of Scotland," commonly applied to the nine of diamonds of a pack of playing-cards, he closed the debate very humourously. A cold north-easter was cutting and howling, and Knox's neck and chin still surrounded by his plaid, when he arose with grim solemnity and asserted that none of the learned speakers seemed to have the least notion of the question; "'The curse of Scotland'—it is really surprising that not one of you philosophers is acquainted with the simple fact which is well known to every cad in Edinburgh—to wit, that the curse of Scotland is the East Wind!" At another place, when the topic of conversation was Sir Humphrey Davy and the ungenerous biography of him by the President of the College of Physicians (Dr. Paris), Knox indulged in one of his mild gibes:—"The eminent claret-sipping chemical baronet never said a good thing in his life, but he has done quite sufficient to support his claim to high genius, in spite of all that has been written against him by the genteel London doctor who has 'attempted his Life.'"

In his lectures and conversation, Knox was wont to vent some odd notions, in a sort of mysterious air, as if he 'could an he would' prove quite as much. He would thus hint that Saxons and Celts were as much distinct species as oxen and buffaloes, and that gipsies were equally different from other members of the human family. He had an ineffable contempt for 'John Bull' and 'Mother Grundy,' Corporations and Academies; and thought the French were 'great at cold steel and hot saltpetre,' but that their scientific genius was mainly a reflex from Germany, so much so that when a great man of that kind appeared in France, you might be sure he had Teutonic blood in him. It was amusing and not quite unin-

structive to hear Knox's sly flings at British art and artists, and his warm praises of such men as Leonardo da Vinci and Michael Angelo. Those foreigners were giants in many arts and sciences besides their special occupations, and even excelled as poets; not like Reynolds, West, Romney, Chantrey, and the rest of that set, mere artists. As to anatomy in painting and sculpture, he sneered at the pother and twaddle to appear deep. What did the greatest artists in the world know of anatomy? Not even the origin and insertion of the biceps muscle. Would a Pocket Anatomy or an Anatomy made Easy have helped Phidias or Raphael? One cause of the low state of Art in Britain is the venal and ignorant criticism, which is so noisy and obtrusive as to put out modest merit. The public is stupid and will be led by trumpets and drums. Thus would Knox talk; and I remember how bitter he was against one of the Journals—I think the Quarterly or Edinburgh Review—for damning a work by Hazlitt, a far higher genius than any of its then editors, and issuing its ukase that nobody was thenceforth to mind him, as he was only a vulgar cockney. And accordingly not a copy of the book was sold thereafter! And this, Knox added, is the public opinion that used to burn the heretics and drown the witches, and now destroys its victims by pressing them to death under type. Some of the foregoing remarks reminded me of Haydon, a man of genius with whom I had slight personal acquaintance. He told me how he had zealously cultivated practical anatomy, as 'the root and foundation of the grand style' in painting. Some people may think that his great pictures show how little he had found of either the foundation or superstructure of that for which he had been so enthusiastically in search.

Like the brothers Davy, Knox was an ardent angler. His little shilling book, entitled 'Fish and Fishing in the Lone Glens of Scotland,' published by Routledge in 1854, is an eminently original production, especially in much that regards the haunts, breeding, and species or varieties of the Salmonidae. It has one of the best small woodcuts of a trout, from his own drawing too, ever published; which engraving has the more merit, as it gives truly the maxillary teeth, which are commonly ignored by ichthylogical artists, even in their large and showy pictures of salmon and trout. The 'Fish and Fishing in the Lone Glens' has never had any reputation equal to its merits. It was probably written to help a provision for the passing day while he was living as best he could near London. A few months before his death, I was surprised at meeting him at the corner of Pannier Alley, Paternoster Row, when we both happened to be rummaging the same old book-stall. Some twenty years had passed since our last meeting. His dress looked very seedy, and he seemed to think that I looked very old, though I was ten years his junior. He stared in his usual grim manner at my white hair—the salt and spice of time—and, expanding and slapping his chest, asked, "Do I look old, Gulliver?" Poor fellow! his wonted fire still glowing in its ashes. He said he was living at Hackney, doing a little poor medical practice, and helping out the means of life by occasional writings for the booksellers. After a long chat, in which he was sweet upon his discovery of the lacteal vessels of the porpoise, and bitter against Todd and Owen and the Cyclopædia of Anatomy, and many other persons and things, we parted for ever in this world. He expressed himself very gratefully concerning some people, especially on the continued kindness of his old pupil, and anatomical assistant during the time of the burking horrors, Sir William Ferguson. That Knox had no guilty knowledge of those atrocities, is sufficiently proved by the fact that Ferguson and Miller, who had the most intimate knowledge of the conduct at that time of his dissecting-rooms, remained on terms of friendship with him to the last. Ferguson in particular, a most honorable man, must have known as much of the business as ever Knox was cognisant of.

And I have always had a strong impression of his innocence of these

atrocities, notwithstanding the base invective by Professor Wilson; for in one of the trials it came out in evidence or confession—I forget which—that the miscreants Phillips and Bishop had sold the body of one of their victims to me, when I was Mr. Abernethy's prosector, at St. Bartholomew's Hospital. Bodies which were obtained before burial were called "sneaked things," and we regularly did our best to refuse them, because we found they were apt to cause unpleasant inquiries. But we never had the least thought or suspicion of murder in such cases. The resurrection-men soon, however, learned to deceive us, by smearing dirt on the sneaked things, as if they had been really disinterred. I well remember objecting to one that looked as if it had never been buried. It had been brought in during the night. On inquiry next day we were assured that all was right, as a respectable tradesman in the neighbourhood and our porter both affirmed. So the money, £12, was paid, and nothing more was heard of the matter, until about a month afterwards. Then, however, the whole transaction was circumstantially told as a good joke; but it was really an addition to the serious proofs of the curses of drunkenness, and of the miserable shifts by which subjects for dissection were at that time procured. The two forementioned worthies had learned that the husband of a notoriously bad woman had lately died at Whitechapel, and that she had, among her other accomplishments, a furious passion for gin. They, therefore, took a large supply of it to her house, opening their business by affectionately condoling with the afflicted widow, and appealing through the fascinating spirit to her feelings. These were soon overtaken, she got drunk, nothing loth, and blubbered out much affection for her dear departed man. Then all was easy to put his body into a sack and steal it away in a hackney coach. It was late next day before the disconsolate widow discovered her loss. Then she raised a loud hallabaloo, got drunk again, and railed against all 'body-snatchers.' Some natural tears she may have shed and wiped them soon; but nobody minded her, except indeed the rabble of boys who were wont to hoot after her in the streets, and the affair was soon forgotten in that dense and busy throng of life.

Suffering at Bermuda from dysentery, I obtained leave to sail thence from my regiment to Charlestown, South Carolina, where I recovered my health. I remained about eight months in the United States of America, and have never ceased to feel that I there saw more than enough of the lawlessness and tyranny of democracy. At Philadelphia I visited the grave of Benjamin Franklin and his wife Deborah; and, inquiring about any memorials of Alexander Wilson, found out Mr. Lawson, who had been the well-beloved friend of the illustrious ornithologist, and his teacher of engraving and etching. Lawson spoke in the warmest terms of Wilson, and took a liking to me for the interest I had in the memory of his friend. We walked a few miles together to visit Wilson's grave and monumental inscription in the grounds of the Swedish cemetery. Lawson proved to me an agreeable guide and companion during my few days' sojourn at Philadelphia. He was a tall man, with a long but cordial face, who thought that Audubon, when he visited Philadelphia, was a boastful person generally, and jealous of Wilson particularly. At New York I passed many weeks very agreeably in the society of my old friend and army comrade, Dr. George Bushe, then the most eminent medical man in America, and the author of the well-known and excellent book on the Diseases of the Rectum.

CHAPTER V.

APPOINTED ASSISTANT-SURGEON IN THE BLUES, p. 26—SCIENTIFIC WORK, 26 — GERBER'S ANATOMY AND HEWSON'S WORKS, WAGNER'S PHYSIOLOGY, BOYD'S VITAL STATISTICS, LECTURES AT THE COLLEGE OF SURGEONS, NOTES OF MY RESEARCHES, WORK AT ST. MARYLEBONE INFIRMARY, 26—BLOOD-CORPUSCLES, ASSISTANCE AND OBSTRUCTION, 26-27—PYRENAEMATA AND APYRENAEMATA, 27—MUSCULAR SHEATH OF ŒSOPHAGUS, 27—MICROSCOPIC TAXONOMY, 27—BUFFY BLOOD, 28—FATTY DEGENERATIONS, 28-29—COAGULATION OF BLOOD AND RIGIDITY OF MUSCLES IN ANIMALS HUNTED TO DEATH, 29—CAPSULE OF ELASTIC TISSUE OF THE LUNGS, 29—PROMOTED TO BE SURGEON IN THE BLUES, 29—ELECTED F.R.S., F.R.C.S.E., F.Z.S., 29—ARMY AND NAVY CLUB, 29—SIR ASTLEY COOPER AT CONDUIT STREET, 29.

In September, 1837, I was appointed the Assistant-Surgeon in the Blues (Royal Horse Guards), then stationed in London, and on alternate years at Hyde Park Barracks, Regent's Park, and in the Cavalry Barracks at Windsor. My physiological pursuits were regularly continued, greatly extending the observations on the blood, chyle, and lymph; especially as regards the comparative sizes and shapes of the red corpuscles in vertebrates, also on the molecular base of the chyle, and on the intimate anatomy of morbid parts. Of these subjects the results are epitomied in the Appendix and Notes to the English version of Gerber's Anatomy, 8vo. London, 1842; Introduction and Notes to the Sydenham Society's edition of Hewson's Works, 8vo. London, 1846; Notes to Dr. Willis's translation of Wagner's Physiology, 8vo. London, 1844; and to Dr. Boyd's Vital Statistics, Edinburgh Medical and Surgical Journal, July, 1843; and Lectures on the Blood, Lymph, and Chyle, delivered at the College of Surgeons, and reported in the 'Medical Times and Gazette,' 1862 to 1863. These lectures were given after my retirement from the army, and while I was Professor of Comparative Anatomy and Physiology to the College and a member of its Council. The Catalogue of Scientific Papers published in the great quarto book of the Royal Society, though very valuable, is on a plan that is in many respects exclusive. Hence Notes with exact references to some of my researches are appended to the end of this volume.

During my service in the army, these researches were prosecuted, not with the advantages of laboratories or anatomical apartments, but amid the distractions and inconveniences of a barrack-room. In London morbid parts were chiefly procured from the great parochial infirmary of St. Marylebone. And here commenced my life-long and happy friendship with Dr. Charles J. B. Williams, who was then zealously and ably pursuing those researches which have since led him to an eminent place among the great physicians of the metropolis; and in the same infirmary I enjoyed the intimate friendship of another excellent pathologist, Dr. Robert Boyd. Blood and other objects were obtained from the animals, living and dead, in the menagerie of Zoological Society at the Regent's Park. To its Council, of which I was then a member, and to its admirable honorary

secretary, Mr. Ogilby, I was indebted for the kindness and intelligent liberality with which they helped my investigations. But there was one exception. An eminent anatomist of great influence in the Society, much to our surprise and indignation, threw cold water on them, chiefly by insinuating that taking blood from the animals, several of which were highly valuable, might be dangerous to them and unprofitable to the Society. But these insinuations became quite amusing when it was discovered that at the same time he was himself privately, and without the Council's authority, taking blood from those animals. He had in fact seen that I was obtaining valuable results, the publication of which was being continued in the 'Philosophical Magazine' and elsewhere. The truth is, as he and every person who witnessed the operations well knew, there was never any danger at all; for the blood was let out by a minute prick of a lancet, of which the animal was either unconscious or had its attention sufficiently diverted by various means.

About that time, long before and after, I was engaged in those extensive investigations by which were originally established ample proofs of the essential difference of structure between the red blood-corpuscles of oviparous vertebrates and mammalia, in opposition to the then prevailing view of Johannes Müller, Rudolph Wagner, Martin Barry, and other eminent physiologists. Hence the names Pyrenaemata and Apyrenaemata were given by me to these divisions of the vertebrate sub-kingdom. Numberless examinations of the corpuscles in some hundreds of species did not afford a single exception, nor do I know that any has ever been discovered, to the rule. I thought it might have been found either in the Monotremes, Marsupials, or Camels; but all these were proved to conform to the apyrenaematous type. The details and needful explanations are given in the works referred to in the Notes of my Researches at the end of this volume. And now the point has become useful in medical jurisprudence, so that we see in legal evidence as to human blood-stains that they are surely derived from a mammal.

The characters of the muscular sheath of the Œsophagus engaged much of my attention at the Zoological Gardens, and the results were new and curious. Anatomists had long, like Owen, associated with the ruminant function the extention of the sheath of striped muscular fibre along the œsophagus down to the stomach. But the fact is that in many mammalia which do not ruminate the sheath of striped muscle goes quite as far to the stomach as in ruminants; while a similar muscular sheath is wanting in Sauropsida, even in raptorial and other birds which are known to have the power of vomiting at will. It is noteworthy too that the differences in the extent of the œsophageal sheath of striped muscle afford good taxanomic characters in the class Mammalia. For one example, the Rodentia, having that muscular sheath extended quite to the stomach, may be thus distinguished from the Quadrumana, in which the same muscular sheath, as in the human subject, ceases much short of the cardiac end of the œsophagus.

Although the late John Quckett, Alexander Nasymth and others have long since proved the classificatory value of the minute structure of the hard parts of Vertebrates, I have long since been of opinion that there is still a sad neglect of microscopic characters in systematic zoology and botany, in which these characters, even when well known as detached facts, are commonly ignored. They indeed have been widely, if not always truly, employed in the determination of fossil remains, but have been lamentably slighted in recent faunas and floras, as a mere glance at our current books will plainly show. To give sufficient examples might occupy a long chapter, but a few may be cited, to show my meaning. Thus the Pyrenaemata and Apyrenaemata are signally distinct. And the family of camels might be truly distinguished as Mammals with oval blood-disks. Why too should not the comparative sizes of the red blood corpuscles be noticed throughout

the descriptions of the orders of the vertebrate classes? Again, as above noticed, the distribution in certain parts of the striped muscular fibre is often admirably characteristic of some sections of Mammals and Sauropsida, and when sufficiently studied is likely to afford important physiological results; so too in this respect of a great part of the animal kingdom. And the same may be said of the distribution of vibratile cilia—absent fom a large section of Arthropods, and abounding in other invertebrates. The hairs too of animals, and the epidermis and its appendages of plants, often present excellent characters. Even the urinary granules or crystals are admirably diagnostic, as witness the beautiful concretions of guanine, with their shining and rounded surface and concentric layers, in the Arachnids, in contrast with the angular crystals of a lithate in hexapod insects, which is a good diagnosis between the two orders. Indeed I have often wondered at this constant difference between true hexapod ticks and octopod arachnids living together on the same part of one sheep. The pestilent *Ixodes* and the rare *Argas* are noticed in Chaper XVII. But in descriptions of the vegetable kingdom omissions of minute structure are still worse. Here the pollen and epidermis and crystals are sadly ignored; and yet one or other of them is often of ordinal value, though sometimes of merely generic or specific import; and this it is that has repelled systematists. But such irregularities will fall into rule when investigations have been sufficiently extended. In the British flora, there are, as I have often shown, orders which are sharply and truly definable by the presence or absence of raphides. And when we consider that such characters as those now in question, both of the animal and vegetable kingdoms, are eminently constant, we may be sure that they are equally important, and none the less so because in the present state of knowledge we cannot explain how or why. Still the importance of microscopic taxonomy will on reflection appear to any naturalist who has devoted as much of his life as I have to the subject. It remains to be vastly extended and utilized by systematists. Many specific and general facts in relation to the matter might be cited from my several published memoirs; but this is needless, as it must be developed in the service of systematic and physiological science as knowledge becomes increased and diffused among biologists.

About the year 1845 I completed an extentive series of experimental investigations concerning the buffy coat of the blood. Two leading but opposite views on its cause then prevailed; the old doctrine of viscidity of the liquor sanguinis, and the later one, on the contrary, of its increased tenuity; the former was maintained by Wharton Jones and Herman Nasse, the latter by Hewson and John Davy. Other explanations, such as retarded coagulation allowing time for the red corpuscles to sink, were still entertained. In the course of my observations the novel fact was discovered that there is an acceleration in the sinking of the corpuscles after a few minutes, so as to appear like a geometrical progression in the rate of this sinking; which was proved to have nothing to do with retarded coagulation, but to be due to the increasing aggregation of those corpuscles. The facts were highly interesting and not less valuable. The accelerated sinking had never before been suspected; and the whole inquiry afforded a complete confirmation of the doctrine of viscidity, and refutation of the opposite view of tenuity, of the liquor sanguinis. The memoir on this subject with all the experimental details, was read at the Medical and Chirurgical Society of London, but refused a place in its transactions. It was an original and important paper, and still stands alone as regards the elaborate experiments, and having been published in the "Edinburgh Medical and Surgical Journal," October, 1845, was soon better appreciated on the Continent, where it was freely or completely translated, as may be seen in "Froreip's Notizen," and other journals.

My paper on fatty degenerations had been published, with a plate, in the forementioned Transactions; and these observations, with the additions

in the Notes to Dr. Boyd's 'Vital Statistics,' proved for the first time that these degenerations are the most common cause of spontaneous aneurysm, and of that weakening of the small blood-vessels which is the usual cause of cerebral apoplexy; and to these then new facts I added that the same degenerations occur in other parts not before suspected of such disease, and thus led the way to the more important and extensive investigations which have since been made by other pathologists on the whole subject. It has now become a very important and extensive one. When quartered during different seasons at Windsor, my observations were made and completed on the stiffening of the muscles and the coagulation of the blood in animals killed by hunting. They afford a perfect confutation of the doctrine of Hunter and his disciples on this question. For another case in a Scotch deerhound see Chapter XI.

Whenever a horse died at the barracks, Mr. Siddall and I were pretty sure to have a dissection of the carcass; and some interesting results were obtained, especially as regards the presence in the thoracic duct of imperfect but quite red blood-disks; and of the complete and immediate covering of the surface of the lung by a firm membrance of true elastic tissue. The former fact was observed independently, I think somewhat earlier, by Mr. Lane; the latter, as noted in Willis's translation of Wagner's Physiology, 8vo. London, 1844, page 360, was an interesting and new contribution to our knowledge of the mechanism of respiration. The formation of fibres by the coagulation of fibrin, quite independently of any cells, was as plain in the horse as I had originally proved it to be in the human subject.

On the 2nd June, 1853, I was promoted to the Surgeoncy of the Blues. To the Fellowship of the Royal Society I had been elected in 1838; and I was one of the Fellows elected by the Council of the College of Surgeons in London, under their then new charter, My election to this last fellowship, in preference to several senior medical officers of the army who were members of the college, and not less respectable men, gave rise to a reasonable remonstrance, addressed by the then Director General of the Army Medical Department, Sir James McGriger, to the Secretary of State. The College-Council, being called on by that Secretary for an explanation, replied in effect that such members as Dr. Mantell, Mr. Owen, Mr. Newport, and myself had been chosen for the fellowship in recognition purely of scientific merits, and that the Council would be happy to add others for the same reason as soon as their claims should become known to and recognised as valid by the Council. To this reply there was no rejoinder and the matter dropped. It was fully explained in the Parliamentary Papers, No. 596, under the title of a "Return to two Addresses of the Honorable House, dated 23 July and 1 August, 1844. Ordered by the House of Commons to be printed, 6 August, 1844.' I was one of the original members and founders of the Army and Navy Club, since become one of the largest and most flourishing of the kind. On the Council of the Zoological Society and its committee of publication I served for many years, and contributed numerous papers to its Proceedings. My services on Committees of the College of Surgeons are mentioned in Chapter XIV.

When Sir Astley Cooper, whose meeting with the Baron Larrey has been described in Chapter III., lived in Conduit Street, on his return to London after his temporary retirement to the country, I sometimes breakfasted with him. That great surgeon, always an early riser in the morning, had resumed the practice of his profession. He was regularly up and busy betimes with dissections and preparations of the thymus, testes, and mamma, and not a little proud of them. He kept his method of work rather dark, and was loth to show you anything before it was completed. Though old, he retained his wonted skill of hand and clearness of head. He was a pleasant talker, like another eminent surgeon, Sir Anthony Carlisle, full of anecdote and story; by no means devoid of literature, so as

to be quite equal in this respect to his eminent professional rival, Brodie. Cooper's memory of persons and things was still excellent. He seldom or never forgot a face or name he had ever known, and he told me that this endowment had been a great help to his professional success. At one of his breakfasts he extemporised a surprisingly accurate summary of some parts of Gulliver's Travels for the amusement of Lady Cooper and two little girls who happened to be of the party. The fine grave face with which the portly old baronet recorded the comical particulars roused a chorus of laughter, led by the two children. They made him repeat the stories, such as the Treasurer Flimnap's dance on and fall from the tight rope, the capture of the whole Blefuscan fleet, the exalted rank conferred on the Man Mountain, Gulliver, the envious slander concerning one of the mighty beauties of the pigmy ladies falling in love with him; and finally all about the Big-endians and Little-endians, High-heelians and Low-heelians. To my remark that his memory must be very good, he replied that it was pretty well, considering that he had never looked into the Voyage to Lilliput since the days of his youth. Happily there is an admirable portrait and a marble bust of Astley Cooper preserved at the College of Surgeons.

CHAPTER VI.

QUEKETT'S RESEARCHES ON THE MINUTE ANATOMY OF BONE, p. 30—CONTROVERSY BETWEEN NASMYTH AND HIS RIVAL, 31—SURPRISING ZOOLOGICO-ATHROPOLOGICAL CHARACTERISTICS, 31—DR. LEE'S DISSECTIONS OF NERVES, 31—REFEREES OF PAPERS AT SOCIETIES, 32—BLOOD-DISKS OF THE TRAGULES, 32—GREAT MASTERS OF THE OLD AND NEW PHYSIOLOGY, 33—ANDREW ROSS, 33—BOWERBANK'S EVENINGS AND GEOFFROY ST. HILAIRE, 33—RESIDENCE AND BOTANICAL PURSUITS AT EDENBRIDGE, 33.

Every anatomist is acquainted with the originality and importance of John Quekett's researches concerning the taxonomic value of the intimate structure of bone, so admirably illustrated in the Histological Catalogue of the College Museum. How maliciously his credit and valuable observations were treated, as mentioned further on in Chapter XIII., by an anonymous critic in the Quarterly Review, vol. LXXXIX., page 433, needs no explanation at present. Indeed his discoveries, as shown in the Catalogue, have now become fully established and incorporated with anatomical science. It was about the year 1839 that Alexander Nasmyth was engaged in like observations on the teeth (Researches on the Teeth, 8vo., London, 1839, and three Memoirs on the Teeth and Epithelium, 8vo. Lond., 1841), and was the first to announce in England that their microscopic structure affords "a new and distinct guide to zoological classification." In the same year he sent some memoirs on the same subject to the meeting

of the British Association at Birmingham, in which his main point was the conversion of cells of the pulp into the ivory. He soon afterwards complained that his communications were more or less mutilated or suppressed through the influence of 'an interested party.' About that time also Nasmyth alleged that there appeared, in a French journal, a memoir by that 'party,' in which more or less of the same doctrine was put forth as a 'nouvelle theorie.' Hence Nasmyth became indignant, asserted that the observations and theory belonged to him, and complained accordingly, yet mildly, in English publications of the day. To this gentle remonstrance, the pretender to the 'nouvelle theorie' replied in a public journal by such a tissue of wild, stupid, and vulgar abuse as was quite surprising on a question of science. This spiteful neology, having been shot ineffectually at its object, and rebounding with damage to its author, was disapproved of, even by his friends, and I believe retracted by himself, so far as a man could retract what he had caused to be printed and published. Nasmyth's complaint and the reply thereto may be seen in the 'London Medical Gazette,' 1839-40; and the scandal in the 'Extra Limites' of that journal, vol. II., p. 671,* is remarkable for an abusive set of zoologico-anthropological characteristics. And the whole subject of the dispute, with frequent personal mention, is described in the published books already cited.

Fortunately for the author of that abuse, he did not repeat it in such language, though complaints of unseemly attacks on or obstructions to other respectable persons by him have been too frequent, by Dr. Mantell and others. And even lately, Professor Seeley complains of the injustice of Nasmyth's assailant "in ignoring the work of others by appropriating their discoveries as his own, and by so representing their labors as to asperse their reputation." This and more to the same effect appeared in the 'Annals of Natural History' for August, 1870. As silence is better than abuse, the name of Nasmyth and his researches have been completely ignored by his rival ever since 1840 or 1841. Indeed, Nasmyth's friends were never forgiven; among these were Robert Liston, John Dalrymple, and myself. To us three, all present together at the same time, Nasmyth had, at his house in George Street, Hanover Square, shown and explained his preparations and drawings, shortly before he took them to the meeting of the British Association at Birmingham; and very plainly, as we judged, demonstrated to us the facts which fully supported his priority as regarded the point in question. And to this effect we gave a formal certificate in our joint names for publication, and it was published in Nasmyth's 'Memoirs on the Teeth and Epithelium,' 8vo., London, 1841, pages XII—XIV. This was one of the means by which I was so unfortunate as to incur the displeasure of Nasmyth's rival.

About the same time occurred a transaction in which the Royal Society was said to have been triumphant at first and defeated at last. In all societies cabals are too apt to prevail injuriously, of which Dr. Robert Lee thought his treatment was an example. However that may have been, a notable and instructive episode in anatomical history was afforded by the fate of his noble dissections of the nerves of the uterus and heart. They were the cherished work of the best years of his useful life. His first memoir on the subject, when submitted to the Royal Society in 1849, and referred to Kiernan and Owen for their report, met with contempt; and so the paper was withdrawn by its author. Another memoir, or rather a repetition of the former, presented to the same Society in 1841, accompanied by certificates from Brodie, Lawrence, and Paget, had better success, much to the credit of those hospital surgeons. I also, having often examined the dissections, and witnessed the preparation of them at Dr. Lee's house in Savile Row, gave my formal testimony in their favor. But Todd and Sharpey were reported to be insisting that the nerves were nothing but fibrous tissue fashioned by dissection; and the original referees were

reported to be sneering that "scissors could not make nerves." So no wonder that another and younger anatomist, Dr. T. Snow Beck, was encouraged to make dissections to discredit those of Dr. Lee, though it could hardly have been expected that the Royal Society would award the Royal Medal in Physiology for these rival dissections. But in 1846 it was actually given to Dr. Beck for them. Dr. Lee, feeling vexed at this attempt to run down him and his admirable dissections, appealed by a correspondence to the then President of the Royal Society, Lord Northampton; and many disinterested persons thought they saw in the appeal a painful evidence of a shady side of some scientific characters. But Lord Ross, in his Address as President to the Royal Society, Nov. 30, 1849, spoke favourably of Dr. Lee's laborious dissections; and they are now safe in the University of Cambridge. There they were justly welcomed, and remain as admirable specimens of skilful neurotomy, much to the honor of Dr. Lee, to the credit of his supporters, and the confusion of his opponents.

But whatever want of judgment may have been shown by the Royal Society in this business, there is no proof of any absence of good faith as regards the referees. Errors will occur in such matters, but not always without a seeming injustice or ungenerous feeling, of which it is needless to cite more than one or two of the numerous examples. Some sorry pundit at the Royal Society, 1837, scribbled a contemptuous and silly note on the back of Dr. Marshall Hall's paper on the nerves; and Dr. Wells's on Dew, many years before, met with a little better favour. Yet it is now matter of history that these two, as well as several other important memoirs, were rejected as unworthy of publication by the Royal Society, and have since become a cherished part of physiological or physical science. On the other hand, the acceptance of worthless or deceiving contributions, of which an instance is noted in Chapter XVI., has been too common. And indeed a correct narrative of such transactions would afford a curious and instructive episode in the history of science and of the Royal Society.

Not far from the time of Dr. Lee's affair, before or after, inconvenient practices were talked of at some scientific societies in respect to the referees of papers. It was rumoured that any eminent and not over-scrupulous person acting in that capacity might make untoward use of the confidence thus placed in him, and that there was at least one notorious example of such conduct. An eminent man, whose talents entitled him to respect, was said to incommode and even overwhelm other laborers in his line who failed in homage to him; and it was added that he was even busy at the societies, always quickly acquainted with the novel matters submitted to them for discussion and publication, and ready to have referred to him papers in which he took an interest. But this interest was of such a peculiar kind that the inconvenience of referring papers to him became apparent sooner or later, and indeed plainly inexpedient, especially in regard to their authors and to the uninterrupted progress of science. But I believe that this fault was quite exceptional, and perhaps exaggerated.

But to scientific enquiries there were obstructions of a different character, some of which are intimated in Chapter V. They too were, I believe, quite exceptional. Here, however, is another little episode of the kind:— At a meeting of the Zoological Society in 1842, I read a very short paper on the blood-disks of the Stanley Tragule, referring therein to my discovery, in November, 1839, of the singular minuteness of those of the Java Tragule. Mr. Owen was present and made no remark; but he afterwards attended at the publication committee, in order to suppress my paper. This he declared it was his intention to do, unless I would expunge the note of my claim to the forementioned discovery. And as any such mutilation was at once peremptorily refused, a vote by ballot was forthwith passed, by his influence, that the paper should not be published. Besides Owen, Mr. Lloyd, Mr. Yarrell, and Mr. Lovel Reeve, voted in that

committee. But a few days afterwards Mr. Yarrell, having examined the evidence, plainly saw the truth, and so he said did Mr. Lloyd; therefore the committee met again, rescinded its former vote, and ordered the paper to be published without any alteration whatever, as it now appears in the 'Proceedings of the Society.' It might be supposed that the objector had some good grounds, but he had none besides an observation he had got made, I think by Mr. Bowerbank, after the publication of mine. The matter is more fully related in the 'Proceedings of the Zoological Society,' Feb. 10, 1870, page 97.

The foregoing are merely examples. They surprise nobody now. Indeed complaints have been rife by or on the part of Hermann Meyer, Henry G. Seeley, and many others, of Mr. Owen's conduct, both as to the discoveries of his contempories and the language in which he has indulged towards them, a notorious instance of which is already mentioned, and has long since been published, in the case of Mr. Nasmyth. Hence the decline or diminution in the influence of a man of great talents. His attempts to convey to himself the discovery of the curious minuteness of the Tragule's blood-discs is the more remarkable, because he asserts, in an indirect reference, through Milne Edwards's 'Leçons d' Anatomie Comparée,' to my elaborate 'Tables of Measurements of the Blood-corpuscles of Vertebrates,' which the venerable and illustrious French physiologist had translated into fractions of a millimètre, that the gradation of sizes there recorded are 'insignificant and unimportant.'

The notices in the Hunterian Oration of 1863 concerning the then recently deceased Brodie, Stanley, Norman, and Quekett, include a reminiscence of how fast time was gathering up the great masters of the old school of physiology—that of Harvey, Haller, and the Hunters—to be replaced by the new school and its histology, since sprung into such vigorous life and growing with signal activity and strength. Hewson, as regards the cell-doctrine, was a bright and lone star in a dark firmament. In the transition set between the old and new in Britain, I was an insignificant member. While at Chatham I had, by the advice of my friends, Dr. Hodgkin and Mr. Joseph Jackson Lister, procured the best microscope that Andrew Ross could produce, comprising a set of objectives from one inch to an eighth of an inch focal length, the last capable of adjustment for covered and uncovered objects. Subsequently deeper object-glasses, one of them an immersion lens, were made for me by Powell and Lealand.

The acquaintance thus happily begun with Ross ripened into intimacy. He gave me much valuable instruction in microscopic manipulation, for which I have ever been grateful to him; and I was always glad to receive the visits of this genial and able optician—first at Fort Pitt, Chatham, and afterwards at the barracks in London. To the latter quarters he often brought his then little son Thomas, afterwards the successor to his father in the business. Andrew Ross then lived in the square at Clerkenwell, in rooms high up, and probably wrote there his excellent treatise on the microscope for the 'Penny Cyclopædia,' a remarkable scientific article by a working man, then fast rising to that eminence which he afterwards gained. He has already been mentioned in Chapter III.

About the year 1839 or 1840, Dr. Bowerbank had acquired that just fame which he has since been happily spared to confirm and extend. At his evening meetings at Highbury and elsewhere I was a frequent guest, and never went there without bringing away new stores of knowledge in the use and revelations of the microscope. There I met, among other distinguished men, Geoffroy St. Hilaire; and at those parties the scientific guests had the advantage of comparing and correcting their observations by the aid of the practical skill and superlative instruments of the kind host. The great French anatomist, the apostle of developement—though this substantive word was not then current in our books—the opponent of Cuvier and

idol of Knox, was there rejoiced by a beautful demonstration of the course of the blood in the dorsal vessel of an insect-larva, a fact which Bowerbank had often shown, and which Geoffroy then for the first time saw. Unmindful or distrustful of earlier observations, especially those of Carus, on the flow of the blood in the abdominal laminae of Agrion, Geoffroy declared that Bowerbank had displayed nothing less than the discovery of a grand fundamental phenomenon. Accordingly the Frenchman expressed his delight and satisfaction with amazing earnestness and vivacity; showing how well and truly he, like many other physiologists, had received both pleasure and profit at Bowerbank's delightful Evening Meetings. He has already been briefly mentioned in Chapter III.

Not long after I had retired from the army, I resided on a property that I had bought at Edenbridge, Kent; but, after painful experience, the clayey soil of that locality seemed to disagree with my health. I liked the place in all other respects, and the more so as it was within 6 miles of the seat of my old and hospitable friend, Lord De Lisle and Dudley. Near Edenbridge too I had the advantage of the kind friendship of Mr. Cobbett, of Scaines. From Edenbridge I removed to my present house on the chalk near Canterbury, where my son was being educated at the King's School, under Dr. Mitchinson, now Bishop of Barbados.

In Chapter II. my botanical pursuits are mentioned. At Edenbridge were prosecuted many of those researches in microscopic phytotomy which have given some useful results for systematic and physiological botany, especially as to the taxonomic value of raphides and the significance of plant-crystals in the vegetable economy. The more circumscribed observations on pollen-grains, tissue-cells of Phanerogamia, and on the cells of the fronds and involucres of the ductulose Cryptogamia had earlier engaged my attention in Ireland and at Walthamstow in Essex. Always fond of and well acquainted with gardening, I cultivated many curious plants in aid of my scientific inquiries; and my health was probably impaired by too much devotion to my fields and garden. But the time had now come when, at the age of 63, the advance of physical infirmity obliged me to relinquish my most cherished out-door pursuits. Yet my mind was as well as ever, and I was never in want of occupation for it. Time was never, except during illness, heavy or tedious to me. When health permitted, I had always pleasant work in hand with microscopic and other dissections of plants and animals. To me, moreover, books were ever an agreeable and permanent resource.

CHAPTER VII.

THE DUEL BETWEEN FAWCETT AND MONRO.

CAUSE OF THE QUARREL, page 35—MONRO'S CHALLENGE, 35—I GO WITH HIM TO THE FIELD, AND HIS STATEMENT ON THE WAY THITHER, 36—ARRIVAL OF FAWCETT AND THE SECONDS, 36—I QUIT THE FIELD; AM RECALLED AND SEE FAWCETT FALL, 36—HIS DECLARATION WHEN FALLEN, 36—WE CARRY HIM OFF AND SUMMON LISTON AND BRODIE, 37—I AM ARRESTED AND BAILED, 37—CORONER'S INQUEST AND VERDICT, 37—MY ARRAIGNMENT AND ACQUITTAL AT THE OLD BAILEY, 37-38—POPULAR EXCITEMENT AND ERRORS, 38—DUELLING SUPPRESSED IN THE ARMY, 38—TRIAL OF MONRO AND RESULT, 38—FRIENDS DURING MY TROUBLES, 38-39.

While I was busy at the Regent's Park Barracks with scientific pursuits and regimental duties, an affair happened which was grievous to several persons, including myself. This was the duel between Lieutenant-Colonel Fawcett 55th Regiment, and Lieutenant Monro, adjutant of the Blues. As this event has some historic interest, and no account of it has been published by an eye-witness, the ensuing narrative is given as a truthful and novel addition to the sad annals of modern duelling, and it is to be hoped the last, or at least nearly the last, of a duel in England.

On the first day of July, 1843, I had the misfortune to be present as surgeon at this duel, in which Fawcett fell to Monro's pistol. The following memoir is compiled from notes made by me soon after the transaction. Fawcett and Monro had married two sisters named Porter, young ladies of some fortune. About ten days before the duel, Monro told me about an unpleasant difference between him and Fawcett concerning some of their wives' property. Monro said that he had made many little pecuniary sacrifices for Fawcett's benefit, and had never devoted more time and care to his own affairs than to Fawcett's, while the latter was abroad with the army in China. Yet, so far from making a kind return for such services, he treated Monro with coolness and ingratitude hard to bear; but might be in some measure excusable, as Fawcett had been much excited and grieved by a suspicion of the fidelity of his wife during his absence in China. But three days before the duel, Monro told me that the quarrel had been very serious. He said that he had been accused by Fawcett of sordidly sacrificing his interest in the sale of a house, and that the accusation was so grossly false as to be quite intolerable. They were at the time together at tea in Fawcett's house, when Monro replied with asperity, and Fawcett immediately called a servant and ordered Monro to be turned out. Monro retired accordingly, but before quitting told Fawcett that nothing but the presence of Mrs. Fawcett and the family connexion prevented him from soundly thrashing her husband for his insolence in the presence of a servant. Monro went on to tell me that for this deliberate insult he meant to have satisfaction; had consulted his old and true friend, Mr. Ross; had engaged, as second, Lieutenant Grant, late of the 44th Regiment, and Recruiting Officer

in the north of Scotland. I heard no more of the matter, and supposed it had dropped like other family quarrels, till an hour or two before the duel.

Some days before it was thought of, Monro and I had arranged to have beds in the hospital at the Regent's Park on the night of June 30th, because our baggage would be on the waggons then, for removal next morning with the regiment to Hyde Park Barracks. On that morning, between four and five o'clock, he called me, much to my surprise, to go with him to settle the affair with Fawcett. I refused point blank, remarking that no surgeon was likely to be wanted, and that, at all events, they had only to look out for one in a neighbourhood where they abounded; besides, I did not see how a duel was possible so far as I knew the circumstances. He said as I and Fawcett had been acquainted at Chatham, I might be useful otherwise, perhaps as a mediator, and that surely I would have some regard to our long friendship and not throw him over in such an emergency. So I went with him in his carriage to the Brecknock Arms, Camden Town, scarcely two miles from the Regent's Park Barracks. On the way thither he said it was very hard that Fawcett should push matters to extremities, when he must know that an insult so publicly given in the presence of a servant could only be wiped out by an apology; adding that anything to save appearances and honour would suffice. And so I remarked that I supposed we should all be amicably at breakfast together. Monro seemed much dejected, and said that if Fawcett still refused an accommodation, it would serve him right if he were wounded; but that he should be sorry to hurt him seriously, and would not willingly do so. How the fatal shot was made under the impression that Fawcett was taking a steady aim, will appear in the sequel.

A few minutes after we arrived at the Brecknock Arms, Fawcett and and his second, Lieutenant Cuddy, came in a brougham; and Monro's second, Lieutenant Grant, in a cab. We all went together into an adjoining field, and they proceeded to measure the ground and produce their pistols. Whereupon I walked off into the road, having said that I could not wait to witness any violence. Then Monro called out to me—"Come back, for God's sake, you can be useful." I was glad to hear this, because it gave me the impression that an amicable settlement was about to take place. So I got back over the pales into the field, expecting to be called to a conference; but before I could reach them I heard the cry of—"Ready, fire," then the report of a pistol, and immediately a shout of "doctor." Fawcett had fallen; standing by him were Monro and Cuddy. Grant walked off. Monro said, "O, Fawcett, you were coolly covering me," and Fawcett replied emphatically that he was not doing so. Then I remarked that matters were bad enough and should not be made worse by wrangling; whereupon the two principals shook hands in a cordial manner, Monro saying, "God bless you, Fawcett," and then, hastening after Grant, the two went off at a run.

At this moment I saw the pair of pistols in Cuddy's coat-pocket. Then he and I agreed that he should go off to get a shutter or hurdle to carry the wounded man away; and as soon as Cuddy was gone, Fawcett asked me what was my opinion, and whether the wound would prove mortal, adding that he hoped I would not leave him in this extremity. I assured him that I would not desert him, and bid him be of good cheer, for I would see him carefully lodged and attended to. Examining him superficially, I found that the bullet had penetrated his chest. His heart was acting but feebly and his breathing was laborious. He complained of pain and loss of power in the lower limbs. When I put him into a better position on the ground, he breathed more freely, his pulse improved, and he said he felt much relieved. A policeman now came to us, in answer to my shout to him when he was passing the edge of the field. He asked "who did it?" To this question Fawcett replied, "What is that to you? We have been prac-

ticing; it is an accident." This emphatic declaration never came out during any part of the legal proceedings.

The policeman, at my request, went to get a shutter or hurdle, and he and Cuddy quickly returned with a board. On this, with the assistance of some country people who had come to us, we carried Fawcett to the Brecknock Arms, scarcely three hundred yards off. There we were peremptorily refused admittance; they rudely repulsed us. I then wrote a pencil note to summon Sir Benjamin Brodie and Mr. Liston, which Cuddy drove off with in the brougham that had brought him and Fawcett out. We saw no more of Cuddy, but he did all he could in the most devoted manner for his principal. Then we carried the wounded man to the Camden Arms, an inn in a neighbouring street; and soon after we had put him to bed there, Brodie arrived. Mr. Liston and Mr. Sandys (a surgeon in the vicinity) now joined us. After a careful examination we came to the conclusion that the lung and spine were badly hurt, and that the case was likely to prove fatal.

About an hour afterwards I was taken before Mr. Long, the magistrate at St. Marylebone, and discharged by him. In the afternoon, about four o'clock, I went from Hyde Park Barracks to see Fawcett again at Camden Town. He appeared quite cheerful, and said he was much better. When I told him that I had got well off from the police-office, he remarked that he flattered himself I should have no more trouble about him, for he had no doubt he should 'get over this job;' and, shaking hands with me cordially, thanked me for my kind attention to him. But by this time a police inspector was after me, and I was again taken before the same magistrate and bound over in heavy bail to appear at a future day.

Three or four days afterwards poor Fawcett died, and then my troubles began with a vengeance. Being again taken before the police magistrate, I was bound in renewed bail to the amount of £5,000. My securities were officers of my regiment—Colonel Richardson, Captain Oliver, and Lord March (now Duke of Richmond and Gordon). The magistrate (Mr. Long) gave me no needless trouble. But Mr. Thos. Wakley, the coroner and editor of the 'Lancet,' was in his glory at the inquest. He committed me to prison repeatedly, in spite of the security I had already given, and I was as often liberated by one or other judge in chambers, having to bear my imprisonment as well as might be in the intervals. At first the coroner summoned me as a witness only to commit me as a prisoner. There were several adjournments of the inquest. The coroner used sometimes to shake hands in a derisive manner with me. At the sittings, he and his deputy, a Mr. Mills, and another voluble gentleman, a young spark said to be the coroner's son, would enter into discussions with the spectators or jury as to my guilt and responsibility, so that my solicitor had to demand that such conduct in my presence should be suppressed. When it came out in evidence that Monro and I had passed the night together immediately preceding the duel, in the regimental hospital, as already explained, the coroner and jury and spectators considered that they had discovered a great fact; though it was nothing but a mare's nest, to have 'sensation' bracketed in the newspapers. The coroner impressively remarked that "he should be sorry to stand in Mr. Gulliver's position." I thought I should be sorry to have stood in his when he was resisted by an insurance company, though he might be as innocent of arson as I was of murder.

At the last sitting of the inquest, the jury found a verdict of wilful murder in the first degree against Monro, Grant, and Cuddy, and against me in the second degree. The coroner sent me again to prison, and I got out again as before.

In due time I was brought for trial to the Old Bailey. After I had been a few minutes in the dock at that dismal place, and the jailer had put a melancholy sprig of rosemary and rue before me, the Attorney-General for the prosecution rose and addressed the Judge as follows:—"The guilty

parties are still at large; and, after having carefully read the depositions, it does not appear to me that the charge can be sustained against Mr. Gulliver. I have, therefore, at present, only to move a *nolle prosequi* as regards that gentleman."

Thus the anxious crowd of spectators, thronging the court almost to suffocation, met with disappointment. There was and had been much excitement, and expectation was on the tiptoe for the details of this unhappy duel. It was the popular craze of the day. The street of the Old Bailey was so crowded with people that it was with difficulty that I made my way, with help of a policeman, to the place of trial. The popular interest seemed insatiable, and the sad affair was as much to the delight of the legion of newsmongers as to the grief of all righteous people. Strange errors too prevailed as to the circumstances, including rumours of foul play; and not long since a ridiculous mistake on the subject appeared in such a sober journal as the 'Athenæum.' But in truth there was nothing whatever affecting the conventional honour of any one of the parties concerned in the duel. No doubt it might and ought to have been prevented by some true friends, if not by the seconds. It is sad to record that both the wives of the principals were well acquainted the night before with the intended duel, and that Mrs. Fawcett was said to have promoted it because she had taken a dislike to her husband.

Bad as the affair was, it had the good effect of wiping out the practice of duelling from the army, after an animated discussion on this case in the House of Commons. Monro and the two seconds had escaped. Cuddy was pardoned and admitted as evidence for the Crown against Monro when he gave himself up for trial, and was sentenced to a year's imprisonment. At the expiration thereof, he was made barrack-master at Sligo in Ireland, an appointment which was given him by the Colonel of the Blues, the Marquis of Anglesey, who at the time was Master-General of the Ordnance.

Many were the congratulations, both by word of mouth and in writing, that I received on my escape. Among the latter, here are two letters which I received—one from Dr. Hair, who was long resident as friend and physician with the Duke of Richmond; and the other from Sir James M'Griger, Bart., Director-General of the Army Medical Department:—

"Gordon Castle, Fochabars,

"My dear Gulliver, "August 28, 1843.

"Believe me, I am most sincerely happy that your troubles and anxiety in this unfortuate affair have terminated so well. I congratulate you with all my heart, and all here rejoice with me on the occasion. The Duke, March, and Boo desire me to tell you so in the kindest possible way. When you have a little spare time, let me hear from you. Tell all, any, and everything that I may not see in the newspapers; also all you know or can learn about our poor friend, Sandy Monro. I will delay writing at length to you till your time is less taken up with anxiety.

"I am, &c.,

"Archibald Hair,"

"S. James's Place,

"My dear Sir, "July 27, 1843.

"The sight of your card yesterday, on my return home, gave me peculiar pleasure, for I was about to call on you at Newgate. I earnestly hope the unpleasant business which must have annoyed you of late, will soon terminate in a victory for you, and that you will obtain credit for distinguished humanity and kindness. Be assured that none of your friends will more heartily congratulate you than I will.

"I am, ever yours,

"J. M'Griger."

This letter was written when I had just got again out of jail before the trial. Others equally gratifying I received afterwards from the same kind hand, and from other friends.

Indeed the generous sympathy given to me throughout the whole painful business was very grateful to my feelings, and has made a lasting impression on my memory. Among those whom I had to thank for such kindness, besides the friends already mentioned, were the late Duke of Richmond, Sir Watkin William Wynn, Colonel the Hon. Charles Maynard, Dr. Robt. Boyd, Dr. Clendinning, Dr. Robert Willis, Mr. Edward Jesse, Mr. Bernal Osborne, Mr. Stanley, and all the officers of my regiment from the old Marquis of Anglesey to the youngest cornet. Mr. Osborne, when Mr. Ralph Bernal, had been my comrade in the 71st Regiment. During the debate on the duel in the House of Commons, he advocated Mrs. Fawcett's claim for a pension, but with no effect, and afterwards complained to me that she had taken no notice whatever of his kind exertions for her. At the same debate Sir Robert Peel declared his opinion that poor Colonel Fawcett ought to have made an apology, so as to prevent the duel. The officers of the Blues generously paid my legal expenses, which were very heavy. After the duel I never had any communication with Mrs. Fawcett, and never inquired norlearned what became of her.

CHAPTER VIII.

When to myself I act and smile,
With pleasing thoughts the time beguile,
By a brook-side, or woods so green,
Unheard, unsought for, or unseen,
A thousand pleasures do me bless,
And crown my soul with happiness.—*Burton.*

After the unhappy anxieties connected with the duel, it was quite refreshing to escape for a few weeks to the peaceful scenes of the far-off Dove and its neighbourhood; and the enjoyment of them was doubled by a congenial companion. In the Prefatory Notes to his two books on Angling, Dr. Davy alludes to the happy excursions we had made together. The present Chapter presents a view of the bent of our minds towards anglers and angling, as intimated near the end of Chapter II.; also of some legendary places and associations which may prove interesting to the admirers of honest Izaak Walton and his friend Charles Cotton. How the name of the former is still fragrant in the affectionate esteem of good men, has been lately shown by the unveiling of a bust of him at his birthplace in the town of Stafford—a tribute highly creditable to its promoters, the Earl and the Dean of Lichfield, and honourable to the memory of the good, simple, and contented, and Christian spirit of the author of the most delightful book of 'Lives' in our language; which biographies have been truly characterised, by Wordsworth, as—

Satellites burning in a lucid ring
Around meek Walton's heavenly memory.

Nature is all-powerful, and so many hearts have been touched and allied by the beautiful simplicity of that happy pastoral, 'The Complete Angler,' that its scenery is as dear to us as that of 'Colin Clout's come Home again,' 'The Faithful Shepherdess,' 'Comus,' or the 'Gentle Shepherd.' And the popularity of Izaak Walton's little book is increasing, and likely to endure evermore. Thus it always is, sooner or later, with the beautiful and true, however obscured for a time by neglect or ridicule. An amusing essay might be written concerning the effect of Walton and Cotton's book and country on different minds. Erasmus Darwin, Anna Seward, and Dr. Johnson, though natives of the neighbourhood of Charles Cotton, seem never to have thought of him or the "Complete Angler.' Yet Johnson must have looked at least into it; for, under the verb to 'swelter' in his

Dictionary, he cites Chalkill's song, and that the great moralist admired Walton's Lives we learn from Boswell. We rambled in Cotton's country with an agreeable companion in a far different mood, and the enjoyment of some angling excursions to the Derbyshire Wye and its tributaries were doubled by just such another friend as Izaak Walton would have loved.

The fidelity of Cotton's descriptions in the second part of the 'Complete Angler,' is as remarkable as if they had been written by a prosaic topographer, rather than by the possessor of the poetic fancy displayed in the admirable 'Ode to Winter,' one of the most delightful of Cotton's poems, a fitting expansion of that part of Walton's text in which the contented and thankful heart of the good old angler overflows for the bountifulness of the earth; and especially "for the fruitful vine, of which, when I drink moderately, it clears my brain, cheers my heart, and sharpens my wit." After all, if the meek possess the earth, honest Izaak Walton must, like Sir Henry Wotton's 'Happy Man,' have had great possessions—

Lord of himself, though not of lands,
And having nothing, yet hath all.

Shirley Common brook—the Common is now enclosed—is the stream described as running "at the foot of the sandy hill, three miles from Ashbourne." It has been made sluggish by some dams for a small cascade in a gentleman's grounds. When we rested near the little bridge, after walking from Derby and breakfasting at Brailsford, it was one of those bright, calm, and lovely autumnal days which holy George Herbert loved and has celebrated so well, and all nature enjoys, more especially the wayfarers, full of gentle thoughts and calm desires, gladdened by the pastoral spirit of the 'Complete Angler' and Cotton's 'Stanzas Irregulieurs' to Walton:—

Oh, how happy here's our leisure!
Oh, how innocent our pleasure!
O ye vallies, O ye mountains!
O ye groves and crystal fountains!
How I love at liberty,
By turns to come and visit ye!

The fields were clothed with greensward, and the banks and hedges still smiling with some familiar wild flowers, such as the blue hairbell, the white and blushing yarrow, the yellow St. John's wort, the red and white campion, the purple foxglove, and, above all, Walton's especial favorite, the honeysuckle. Gnats wantoned in the air, the saffron butterfly and a little bronze-colored congerer flitted gaily by, and the interesting water-ouzle winged its rapid way, like a sprite, over the surface of the warbling brook.

Nor were rural sounds wanting. The pastoral scene through which we rambled was enlivened by lowing kine, bleating sheep, music of birds, in concert with rumbling wains and whistling ploughmen. And if the song of birds was not like the full choir that wakes the universal grove in spring, it was in delightful harmony with the lulling babble of the stream, and quite as good as Lord Houghton's admirable song, 'I wandered by the Brook Side,' or Wordsworth's 'river wandering at its own sweet will,' and 'rivulets dancing their wayward round,' or Blake's 'Sweet dreams of pleasant streams.' It was then that we felt what an instructive and pleasing lesson they may afford to the mind, and that there are truly 'books in the running brooks,' as so often well and truly sung by Robert Burns:—

The muse, nae poet ever fand her,
Till by himsel' he learned to wander,
Adown some trotting burn's meander,
And no think lang;
Oh sweet, to stray and pensive ponder
A heart-felt sang.

The throstle greeted us with a carol as we passed Macworth Castle, provoking the rivalry of a blackbird in a cage at a neighbouring cottage door. We were cheered too at intervals by the *pink, pink*, and soft melody of the chaffinch, the low pipe of the starling, the variable chant of the water-ouzle, and the charming, easy, joyous song, in descending scale, of the willow wren; the repeated double chirp of the chiffchaff, the sweet tender pipe and twitter of the linnet or twite; the harsh, harping ditty, with concluding drawl, of the bunting and yellow hammer; the pretty *chit, chit, wink* and *spittle* of the goldfinch; the lively grating or sawing notes of the great tit and coletit; the short plaintive lay of the hedge sparrow; the monotonous strain of the greenfinch; the shrill, merry, rapid warble of the wren, and the gentle, pensive trill of the robin. Finally, and though last not least, recalling old John Lilly's song,—

> Brave prick-song! who is'it now we hear?
> None but the lark so brave and clear,
> How at heaven's gate she claps her wings,
> The morn not waking till she sings.

Although her joyous minstrelsy was brief, and wanting its summer ecstacy, it was still sufficient to remind us of Walton's beautiful exclamation:—"As first the lark, when she means to rejoice, to cheer herself and those that hear her, she then quits the earth and sings as she ascends higher in the air, and having ended her heavenly employment, grows then mute and sad that she must descend to the dull earth, which she would not touch but for necessity." And this called to mind some verses on the song of this bird in the silver-tongued Sylvester's version of Du Bartas—

> ——————— climbing the welkin clear,
> Chaunts with a cheer, here peer I near my dear;
> Then stooping thence (seeming her fall to rue),
> Adieu, she says, adieu, dear dear adieu.

Proceeding about two miles from Shirley Common towards Ashbourne, you come to Hardy's Hill turnpike-gate, whence a road on the left leads to Spital Hill gate, less than half a mile from Ashbourne, and on to a green terrace from which there is a footpath into the town, From this elevation there is a good view of Ashbourne, with its graceful church-spire, and red brick and blue-slated houses, in the valley below you. Immediately behind the town is Low Top Hill; in the mid distance Thorp Cloud and Bunster Hills; Moor Top is seen beyond and between Thorp Cloud and Bunster; and to the right the Dovedale hills and Thorp Pasturage, covered with plantations, end the prospect. And a pleasant introduction all this is to Cotton's country, such a verification too of his descriptions, and seeming with his and Viator's presence—

> "Like society,
> Conversing with the mind, and giving it
> A livelier impulse and a dance of thought."

The nearer cart-road from Spital Hill to Ashbourne is steep, and partly cut through a ruddy soft rock—

> "Down thy steep slope, romantic Ashbourne, glides
> The Derby Dilly, carrying six inside."

Thomas Moore lived in the neighbourhood, at the pretty Stonecliff or Mayfield Cottage, which stands on a knoll, with its neat garden, amid elm, ash, firs, and lilacs—fit residence for the poet, busy there from 1813 to 1825 with his 'Melodies' and 'Lalla Rookh.' In a letter to his mother, he writes,

"We have just succeeded in taking a cottage; just the sort of thing I am likely to like—secluded and among the fields, about a mile and a half from the pretty town of Ashbourne. We are to pay twenty pounds a year rent, and the taxes about three or four more." In a subsequent letter he adds—"I have taken such fancy to the little place, and the rent is so low, that I really think I shall keep it on as a scribbling retreat, even should my prospects in a year or two induce me to live in London. ..... To-day, while my dear Bessie was presiding over the workmen, little Barbara and I rolled about the hayfield before our door, till I was much more hot and tired than my little playfellow. ..... Sept. 29, 1813: We arrived here between five and six in the evening, and the cottage and garden in their best smiles to receive us. ..... Our cottage is upon a kind of terrace. It is a very sweet spot. ..... 1815: Tell Sir John that he must positively pass the next summer at the cottage with us, if he loves a beautiful country, where every spot opens valleys, woods, parks, and all kinds of rural glories up on the eye."

But those were summer feelings. The red brick chimnies, rising up and contrasting with the sober greystone of the cottage, gave us a significant hint of the too common inconveniences of these little rural retreats; and in due time we find the poet complaining of damp and smoke, and making his escape accordingly.

Not more than four miles off, David Hume provided lodgings for Rousseau and his gouvernante, in 1776, where the eccentric Frenchman is said to have composed his "Confessions." How he quarrelled here with his friends may be read in Mr. Burton's interesting 'Life' of the Scotch philosopher.

You enter Ashbourne, through Compton Street, by a bridge of two arches over Henmore or Schoo Brook, which is a pretty trouty stream, rather larger than that at Shirley Common. Schoo Brook enters the Dove at Church Mayfield, scarcely two miles below Ashbourne. The brook runs through Dr. Taylor's grounds, where he lived in a house when he was so often visited by Dr. Johnson. There is a little cascade, probably the same as that mentioned by Boswell, when he represents the great moralist, one sunny morning, poring with placid indolence on the water, and trying to tumble a big dead cat over the waterfall; on which the biographer reminds us that Æsop at play is one of the instructive apologues of antiquity. The Green Man and Black's Head, now kept by Robert Wallis, is the inn where Boswell took his chaise, in September, 1777, and where the hostess, Mrs. Killingsley, subjoined to her bill a note in her own handwriting, expressing "her most grateful thanks, and sincerest prayers for his happiness in time and in a blessed eternity."

He and Johnson attended Divine service at Ashbourne Church just sixty-eight years before our visit. Johnson was at Dovedale, Ilam, and Hawkstone, in July, 1774; he climbed the high rocky caves called Reynard's Hall and Kitchen, at Dovedale, and bore the fatigue of the day's walk without inconvenience. He even thought that the heat and exercise mended his hearing, and his talk was about the pleasant murmuring of the water among the stones. He said the place, though worthy of a visit, did not answer his expectations, especially the clear quick brook instead of a river. The pastoral virtues and nymphs, he thought, might find a fit abode at Ilam, and that it should be described by Parnell, and the severer scenery of Hawkstone by Milton.

The monument by Banks to Penelope Boothby, in Ashbourne Church, is one of those happy works of genius of which any town might be justly proud. The model may be seen in Sir John Soane's Museum. The lovely child is represented in the calm and sweet tenderness of sleeping ease, though with all her beauty and innocence and the effects of suffering, in a

a brief interval of pain and weariness, the image of death soon to end in the reality:—

Sweet rose, fair flower, untimely pluck'd, soon faded,
Pluck'd in the bud, and faded in the spring!
Bright orient peal, alack! too timely shaded!
Fair creature, kill'd too soon by death's sharp sting!

Shakspeare by these lines may have impressed Milton when, in his seventeenth year, he wrote his 'Ode on the Death of a Fair Infant,' beginning—

O fairest flower, no sooner blown but blasted,
Soft silken primrose, fading timelessly,
Summer's chief honour, if thou hadst outlasted
Bleak winter's force that made thy blossom dry;
For he being amorous of that lovely dye
That did thy cheek envermeil, thought to kiss,
But kill'd, alas, and then bewailed his fatal bliss.

If poetry be not vain to weep such loss, perhaps Coleridge's 'Epitaph on an Infant' might be more soothing to the feelings of parent. It has already been adopted on a tablet of one of the pilasters at Salisbury Cathedral, and elsewhere:—

Ere sin could blight or sorrow fade,
Death came with friendly care;
The opening bud to heaven conveyed,
And bade it blossom there!

And indeed there is something so affecting in those untimely deaths as is apt to recall dedicatory verses: especially so when aided by the touch of genius, as in this sculpture by Banks at Ashbourne, and that by Chantrey to two infants in Lichfield Cathedral.

The Dirge of a Child, by Felicia Hemans, is still dear to mothers. The following stanza occurs to my mind:—

Thou wert so like a form of light,
That heaven benignly called thee hence,
Ere yet the world could breathe one blight
O'er thy sweet innocence:
And thou that brighter home to bless
Art passed with all thy loveliness.

In the church at Fladbury, midway between Pershore and Evesham, are some pretty lines to a boy of the old family of Perrott:—

'Like a dewdrop kissed off by the sun's rising beam,
A brief but a beauteous existence was given;
The soul seemed to come down to earth by a dream,
And only to awake when ascended to heaven.'

Here is another epitaph which my wife and I copied from an upright tombstone, among the rank nettles, in the churchyard of Mayfield, Sussex, to Ann Young Thomsett, who died May 18, 1813, aged two years and nine months:—

Death seized the treasure,
To the desert given;
Christ claimed the flower
And planted it in heaven.

Some few more have been picked up in my travels :—

As careful nurses to the bed do lay
Their children which too long would wanton play,
So to prevent all my ensuing crimes
Nature my nurse laid me to bed betimes.
In Yorkshire.

Sleep lovely babes, and be at rest,
God calls them first whom he loves best.
At Yarmouth.

Sleep soft in dust, await the Almighty's will,
Then rise again and be an angel still.

Churchyard on the Chepstow road from Monmouth.

God created such immortal flowers
To grow in his own paradise, not ours.

Tixall Poetry, 4to., Bath, 1813.

The Talbot Inn, where Piscator calls for a flagon of ale to welcome Viator to the Peak, has long since disappeared, and on its site is now a large brick house, formerly occupied by Mr. Langdale, and at present by Mr. Bricklebank, a solicitor. It is on the north-east side of Ashbourne as you go out with Piscator and Viator to Low Top, mentioned in the dialogue as "the hill out of the town."

From this hill the inclosed green fields of the valley, and the highlands which excited Viator's surprise, present a fine pastoral view. The hills are the same, with the addition of Blackmore, which have already been mentioned as forming the background of the landscape seen from Spital Hill. "But what pretty river is this we are going into?" "Why this, sir, is called Bentley Brook, and is very full of trout and grayling, but so encumbered with wood in many places as is troublesome to an angler." It is but a rill or rivulet, like the others which you cross between Derby and Hanson Toot, and is about two miles from Ashbourne, and still much incommoded with wood. Piscator had to ford it; but it is now spanned by a little bridge of two arches, and runs in a delightful vale, pleasantly decked with trees and hedgerows, to flow into the Dove about a mile westward of Ashbourne, and the same distance above Henmore Brook.

The road pursued by Piscator and Viator is much less pleasing than the parallel and grassy walk on the right or Derbyshire bank of the Dove through Dovedale. This is the celebrated part of the river, about two miles in length, between the lovely hills, studded on the east or Derbyshire side with a profusion of large whimsical rocks, with as many odd names, and on the opposite or Staffordshire side by plantations of birch, ash, and pine. The effect of the whole scene is exceedingly beautiful, often in parts curious and romantic, and always interesting. But, like the charming scenes described by Cotton, it wants the grandeur of sublimity. Nor did we see a single crag or mountain that is truly magnificent; though the gorge at the north end of Dovedale, as you look down the stream, has some splendour, especially the Nabs, a sort of miniature Kyber Pass, through which we descended after a day's ramble over the Bailey Hill. The pass between the Chedder Cliffs, in Somersetshire, is far grander than anything of the kind in Dovedale. However large the scenery of the Dove may seem at first sight, you soon perceive that it is but a mountainous country in minature—

"Yet dear to fancy's eye the varied scene
Of wood, hill, dale, and sparkling brook between!"

The spertive exaggerations in the dialogue, as when Viator exclaims of the prospects from Low Top—"Bless me! what mountains are here! are we not in Wales?" And a little further on, after all the pleasantry about Hanson Toot, his calling it Penmen Maur—the name of a vast promontory on the north-east coast of that principality—have led some readers to expect exalted grandeur; whereas truly the prevailing character is simply elegance and beauty, greensward the dress of the land, diversified by steep fantastic rocks, often like large ruinous walls, melting away into grassy hills, with most of the delightful and varying appearances, save the majesty or magnitude, of mountain scenery.

In this frame the swift, transluent, silver Dove is so gracefully set as to charm the eye of the beholder; nor is it ever likely to fade from his memory. 'A thing of beauty is a joy for ever,' as anyone will feel if he ascend Thorp Cloud, see the lovely river winding through Bunster Dale and the verdant meads below. So too in descending the mountain, if you look up the bright crystal stream inlaying Dovedale. And your happiness will be doubled if you share it with a congenial companion, and time and weather permit, then to exclaim heartily with Shakspeare—

> Full many a glorious morning have I seen
> Flatter the mountain tops with sovereign eye,
> Kissing with golden face the meadows green,
> Gilding pale streams with heavenly alchemy.

Unlike rivers that ran fresh from mountains by shores of shingle, the banks of the Dove, even in rocky Dovedale, are verdant to the very brink of the water. It is generally rapid, now sweeping quietly and smoothly along, ever and anon broken by irregular rocks and by many a shallow small cascade, often purling and trotting with ripple and dimple on its way, and occasionally slackening into comparative repose in deeper parts, when, like Allan Ramsay's 'How Burn,' it appears—

> Beneath is clear as glass,
> Kissing wi' easy whirles the bordering grass.

The characteristic swiftness of the Dove is maintained even to the end of its romantic course, where it glides—for it is here too deep to brawl—through the tame rich meadows, opposite Newton Solway, to join the Trent about a quarter of a mile from the pretty old church. Even for some distance after the junction, the quick stream of the Dove is in contact with, yet in curious contrast to, the slower and majestic current of the Trent, while the Derwent runs into the Trent twelve or fifteen miles lower down, without any perceptible difference in the pace of these two streams. The swift Dove, preserving itself in the slow Trent, is but a tiny example of what is well known on a far grander scale, as we read in Purchas's Pilgrimage and in Mungo Park's Travels, of the mighty Congo or Zayr maintaining its freshness for many leagues in the ocean.

Though much has been said and sung in praise of rivers, we must notice the beauty of the silent ground-swell in which the Trent and other large deep rivers, as the Shannon, differs from the Dove and such smaller streams. An idle hour, mayhap not idly spent, may be pleasantly passed in watching the eddies rippling and swelling up from the depths, reflecting in varying forms the scenery, and gracefully curving and expanding, ever forming and disappearing, like those placid duties in this life of which the pleasures are so manifold.

The Lathkil, commended by Cotton for the transparency of its water, and the redness and excellence of its trout, receives the Bradford near Alport, and flows into the Wye in Rowsley Meads; and though the two former, as he remarks, are not large enough to be called rivers, "being no better than great springs," they are still very full of fine trout; while it is

remarkable that they contain no grayling, save a few small stray ones at the mouth of the Lathkil, though this fish abounds in the Wye. The sweet sequestered valley of the Bradford, with the romantic and precipitous village of Youlgreave on the high north bank of the rivulet, will not be forgotten by any one who has lingered with rod and line, as we did, in this rocky, sylvan, quiet, trouty nook. The scenery of the Manifold too is very lovely with its "hill, dale, and shady woods, and liquid lapse of murmuring streams," and Thor's Cave, near Wootton, about four miles from Cotton's pretty moorland seat at Bereford Hall.

The Wye, which has its source, as Cotton tells us, and we saw, on Axe Edge, near Buxton, "becomes very soon a delicate, clear river, and breeds admirable trout and grayling, reported by those who, by living on its banks, are partial to it, the best of any." Though wanting the swiftness of the Dove, the Wye has many a charming stream prattling and babbling—

> "Like childhood dancing as it goes;
> Then through the plain in tranquil wandering creeps,
> Reflecting every herb and drooping bud
> That overhangs its quietness."

In its course through Monsal Dale and Taddington Bottom, and from Bakewell by the venerable Haddon Hall to its mouth in the Derwent at Rowsley, the Wye is not only beautiful in itself, but has so many accessories of beauty in foot-bridges, bold hills, deep glens, smiling fertile meads, green ravines, 'bosky bournes, dingles and narrow dells from side to side,' as to rival the scenery of the Dove. The Wye 'wandering at its own sweet will,' through such prospects as open to you from a hill a mile eastward of Bakewell, presents a finer view than the meandering of Cotton's own river, 'like a snake,' as he describes it, through the vale near his house.

The bridge across the Dove as you go from Hanson Toot to Alstonfield, which Viator thought was 'certainly made for nothing better than a wheelbarrow,' is now of stone, with two arches, and four feet broad. Had he not been so terrified by the descent to it from the hill, 'as steep as a penthouse,' he might have seen Alstonfield Church, with its tower, as cheering evidence that he was not 'a stage or two beyond Christendom,' before he crossed to the Staffordshire side.

Beresford Hall 'stands prettily,' as Viator remarks, on an eminence near the river. "Here's wood about it too, but so young as appears to be of your own planting;" to which Piscator replies in the affirmative. The house is of plain stone, now occupied by a farmer; its oldest part is in a ruinous state. There is still a large wainscotted room, with Cotton's arms in the window; and a smaller room adjoining has the Beresford arms emblazoned in like manner. These rooms are in the front of the house, commanding a fine view of Norrowdale Hill. We saw in the house some oak carved with Cotton's arms, dated 1656, and a similar carving was seen by us in his pew at Alstonfield Church.

'The brink of the hill' mentioned by Piscator, the same that he and Viator climb, and from its top go directly to the house to dine, is between it and the river, and has a narrow passage, just large enough to admit a man, through the rock into a chamber, called 'Cotton's Cave.' In this they have a tradition that he was wont to hide himself from his creditors. He probably alludes to it in his poem of 'Retirement:"—

> Oh, my beloved cave! from Dog-stars' heat
> And all anxieties my safe retreat.

The bowling-green was on this side of the hill, between the house and the river. He seems to have liked the amusement of bowls, and remarked—

"To give you the moral of it, it is the emblem of the world, or the world's ambition, where most are short, over, wide, or wrong biassed, and some few jostle to the mistress Fortune! And here it is, as in the Court, when the nearest are the most spited, and all bowls aim at the other." But the 'Complete Gamester,' second edition, 12mo. London, 1676, in which this passage occurs, has not Cotton's name, though the book is attributed to him in the library catalogue of the British Museum.

The little foot-bridge which the interlocutors saw from the fishing-house is gone; and the path under the rock, where Piscator tells Viator to take heed of slipping into the water, has been made broad and good. There are beautiful streams between the hills and rocks below the fishing-house; and about two hundred yards from it is a wooden foot-bridge, just above which are 'the slippery cobbling-stones' by which Viator crossed to the 'fine stream at the head of this great pool.' And about fifteen yards lower down stream is Pike Pool, with which, as Cotton says, 'young Mr. Izaak Walton was so much pleased as to draw it in landscape in black and white, in a book I have at home." The Pike is a grotesque spire-like rock, rising from the middle of the dark deep pool, where the river passes between and through the cliffs. The pool takes its name from this rocky pike, by no means from the coarse and ruthless fish of the same name.

About three hundred yards up river from Beresford Hall is the Fishing House. It is a small stone building, situated where the delicate clear river, bending by the little peninsula mentioned by Viator, becomes sluggish. Cotton fondly alludes to it in his 'Epistle to J. Bradshaw, Esq.,

> My river still through the same channel glides,
> Clear from the tumult, salt, and dirt of tides;
> And my poor fishing-house, my seat's best grace,
> Stands firm and faithful in the self same place
> I left it four months' since; and ten to one
> I go a-fishing ere two days are gone.

The motto, "Piscatoribus Sacrum, 1674," and the cypher of the intertwined initial letters of Walton's and Cotton's names above the date, are still perfect over the door, or at least were so in the autumn of 1845, the time of my last visit. Inside the fishing-house there was then a bluish, circular, stone table, flagged floor, and plain whitewashed wall—no longer 'finely wainscotted,' as was the case when Viator noticed the exceeding neatness of the interior. This pretty and interesting building is in much better preservation than Cotton's moorland seat of Beresford Hall. In front of the fishing-house are two lime trees, and on its sides some firs or other allied conifers; and as these were all planted by Cotton, according to the remark in his second chapter, it is to be hoped that they will be carefully preserved. That he was fond of arboriculture may be supposed from his 'Planter's Manual,' an octavo volume, published in London, 1675.

How he delighted in the place, during the angling season, may be gathered from the dialogue, and more especially from his poetry:—

> O my beloved nymph, fair Dove,
> Princess of rivers how I love
> Upon thy flowery banks to lie,
> And view thy silver stream,
> When gilded by a summer's beam!
> And in it all thy wanton fry,
> Playing at liberty;
> And with my angle upon them,
> The all of treachery
> I ever learned, industriously to try!

But the situation of Beresford Hall, at a distance from any town or village, in a bleak moorland district, where stone walls displace cheerful hedgerows, must have been dreary in the dead months, and, considering Cotton's love of society, sufficiently distressing to him at that season. As justly remarked by Sir William Temple, "The restless humour so general and natural to mankind, is a weed that grows in all soils and under all climates, but is raised easier by the more sprightly wits and livelier imaginations than by grosser and duller conceptions; and the more ingenious men are, they are the more apt to trouble themselves." How Cotton was led to trouble himself to write some witty and coarse burlesques and travesties, showing his petulence at times, has been enough made known, though with little allowance for his sprightly wit and the manners of the time, and the querulous irritability of his temperament; while a just and comprehensive estimate of his poetry, and a generous and worthy biography of him, are yet wanting: though to the excellence of Cotton's "Ode to Winter," a fine tribute has been given by Wordsworth; and Coleridge, in the nineteenth Chapter of his 'Biographia Literaria,' expressed the warmest approbation of several others of Cotton's poems. He must have been an amiable man who had such a long and intimate friendship with his adopted father, Izaak Walton, and was one of those eminent persons who successfully solicited the patriarch of anglers to write his beautiful 'Life' of their common friend, the excellent Sir Henry Wotton, and, moreover, gave from his limited means assistance to the imprisoned cavalier and poet, Colonel Richard Lovelace.

Poor Cotton died, aged 57, in St. James's parish, London, in 1687. But I have in vain sought for his sepulchre in the church and grave-ground of Piccadilly, though he is said to be buried near or in that now great tide of human life. Yet his death took place two or three years after Sir Christopher Wren had completed the present church. But it is to Cotton's rural scenes that his pleasant touches of nature carry our minds. And let all who truly love to "angle for a trout or grayling in a clear stream," join in the ejaculation ascribed by Walton to Sir Henry Wotton, and by Sir Egerton Bridges to Sir Walter Raleigh:—

Blest silent groves—oh, may you be
For ever mirth's best nursery!
May pure contents
For ever pitch their tents
Upon these downs, these meads, these rocks, these mountains,
And peace still slumber by these purling fountains;
Which we may every year
Meet when we come a-fishing here!

CHAPTER IX.

JOHN DAVY:

HIS DEATH, page 50—NO ADEQUATE BIOGRAPHY OF HIM, 50—JEALOUSY AMONG EMINENT MEN, 51—EXAMPLES OF HIS ORIGINAL OBSERVATIONS, 51—HIS MERITS, 52—HIS INFERIORS PREFERRED, 52.—HIS RETIREMENT AND PUBLISHED BOOKS, 52—HIS PERSON AND MIND, 53.

If, as we are told, on high authority, "One touch of nature makes the whole world kin," how full and true this beneficent effect must be on congenial minds who have often enjoyed together her most delightful moods. This was the case with Dr. John Davy and me, and his friendship increased the happiness of a long and the best time of my life. Some circumstances concerning our first acquaintance are mentioned in Chapter II. and VIII., and a few Recollections of him were recorded by me in the 'Medical Times and Gazette,' September 23, 1871. Indeed the memory of his virtues has ever been cherished by me; so that Swift's elegant but sarcastic verses to show how soon the dead are forgotten, and Charles Cotton's complaint to the same effect, have no response in my mind. But the latter, in his poetical address to Izaak Walton, on the Life of Dr. Donne, has these lines, which express my own feelings for John Davy:—

> For, whereas most men's friendships here beneath
> Do perish with their friends' expiring breath,
> Yours proves a friendship living after death.

Dr. Davy died, aged 78, on the 24th of January, 1868, thirty-nine years after the death of his renowned brother, Sir Humphrey Davy. John Davy's life was much devoted to the innocent and ennobling pursuit of various branches of animal physiology. His diligence and conscientious zeal and ability in the discharge of his medico-military duties and in scientific research, were leading traits of his character. It is to be regretted that there is no adequate biography of him, especially as his son and son-in-law have survived him; and the eminent Linacre Professor of Physiology at Oxford is surely well qualified for the task. The short obituary notice of John Davy in the 'Proceedings of the Royal Society,' is not sufficiently subjective, and is besides somewhat ungenerous to his merits. In that notice these merits are placed chiefly on his sympathy with and veneration for his elder brother's reputation; as if such a generous mind as John Davy's could avoid a noble respect and tenderness for his true friend and illustrious relative. In the same obituary we were told that John Davy's "main deficiencies were deficiencies affecting his power of imagination and his faculty of exposition;" as if—witness, *e. g.*, such subjects as Oken's vertebrate skull and Huxley's Bathybius—the imaginative and expository faculties were not too often in want of men like John Davy, men scrupulously diligent in experimental observation, and judiciously precise in the record and application of the facts. He had another noteworthy merit, which was his steady encouragement and assistance to younger men in their professional pursuits. It was his delight to cheer them on. To me the remembrance of this is especially grateful; and I can never forget how kindly and effectually he promoted my researches on the chyle and blood, on the softening of clots of fibrin, and on the union of dead with living

bone, and how he afforded me at all times the valuable aid of his profound chemical knowledge whenever required in my investigations.

To praise John Davy for entertaining no jealously of his great brother's fame, was just and graceful, for there is too often an inability of appreciation between eminent contemporaries. The brothers Hunter quarrelled from this cause. Johu Hunter, though intimately acquainted with Hewson, had nothing better than covert sneers for Hewson's admirable observations on the blood-corpuscles; and, though cultivating the warmest friendship with Jenner, was never known to have taken the least interest in the important subject of vaccination. Harvey, who was physician to Lord Bacon, and well knew him and his writings, said derisively to old Aubrey, "He writes philosophy like a Lord Chancellor;" and Bacon never once recognises Shakspeare, and amid all the pother in his books about science, has not the slighest notice of Harvey's great discovery of the circulation of the blood. Nor could Harvey be brought to perceive the import and merit of the discovery of the lacteal system by Pecqueet and Asselli. Ben Jonson, in his *Bartholomew Fair*, sneers at "*Tales*, *Tempests*, and such like drolleries" of Shakspeare: Reynolds contemned Hogarth; but declared at a great festive meeting that Gainsborough was the greatest landscape painter, only to lower Wilson, who rose and sharply retorted—"And the greatest portrait painter too." Even the learned and fanciful Fuseli despised the works of Romney, Gainsborough, and Hogarth; Handel was wont to assert that he could see no excellence in the music of Purcell; Horace Walpole expressed a pitiable contempt for Goldsmith and Johnson; Waller writes, in one of his letters—"The old blind schoolmaster, John Milton, hath published a tedious poem on the Fall of Man; if its length be not considered as merit, it has no other." Defoe was put into the 'Dunciad' by Pope, and was written of by Swift as a 'stupid illiterate scribbler, the fellow that was pillored, I have forgotten his name.' Many more instances might be given to the same effect; but the present are sufficient to show that John Davy had a virtue not always possessed by eminent men. Indeed it was his character to admire merit wherever he found it. Though his application failed for a Professorship in the University of Edinburgh, I have heard him more than once speak with the greatest respect of the distinguished persons there who had not promoted his wish. And so it would have been a wonder if John Davy had not felt an affectionate reverence for the transcendant mind of his good and famous brother.

Dr. Davy was not a compiler or sciolist, but an original and profound observer, always explaining his inquiries with didactic and instructive perspicuity; and his 'Angler and his Friend' is a good example of the imaginative faculty in its proper place. His early contributions to chemistry have been well noted in Thomas Thomson's 'History of Chemistry;' and to John Davy is due the discovery of phosgene (chloro-carbonic acid), and several important facts in animal physiology. Among these are the bilocular auriole of the heart and the cutaneous branch of the pulmonary artery in batrachians; the chemical composition in them and in fish of the urine, and of the excrements of insects; the specific gravities of various parts; the temperature of man under several conditions, and of many animals, including the regular warmth of some fishes; the absorption of oxygen by the red corpuscles and not by the serum of the blood; certain differences in the poison of some reptiles; interesting points in the anatomy and physiology of the Torpedo and the generative organs of that and other Plagiostomes; phenomena connected with the blood, respiration, and animal heat; and those facts which have proved how successfully the ova of the Salmonidae can be transported to and hatched at a distance, even as far away as the Antipodes. This last result was a valuable one to the commercial resources of Britain and some of her colonies, and would be so to Ireland were salmon-breeding judiciously practiced there.

His interesting and important observations on the warmth of certain fishes having been made on species of Scomberidae, induced me to try another member of the same family, the common mackerel. When just taken out of the water, I always found the temperature of this fish to be, as in most others of the class, only about 2° higher than the sea. At the same time I found that Medusae were 1·6° above the temperature of the water in which they were floating alive. His discovery of hot-blooded fishes has been sadly ignored of late. Mr. Moseley, in his book on the 'Challenger' expedition, tells us of many Scomberoid fishes coming alive into his possession; and yet it does not appear that he made even a single trial of the temperature of any of them! although the question is still one of very high physiological interest.

It has been objected to some of John Davy's researches that they are curiously insignificant, and that they may have been so regarded by a few medical men but little acquainted with physiology is not surprising; but I have heard the late Sir Benjamin Brodie remark, with a smile, "Dr. Davy has of late been great on the urine of a gnat!" Still, small as it may seem, the truth is really a large one. It establishes by precise facts one great use of the myriads of such insects in the economy of nature. They prepare a highly nitrogenous food for plants, and may thus even keep forests alive. Brodie admitted, when this was mentioned, that it gave some importance to researches which, at the first blush, appeared but trifling.

Indeed the generous pursuits of John Davy afforded a bright example to the medical officers of the army; but so far from such an example having met with due reward, or even recognition, he was displaced or passed over, in the medical department of the service, to favor dull mediocrity or duller inferority. And this not only in the department of the public service which he had adorned, but in civil life, when men much below him in merit received honorary degrees from the Universities, while these learned bodies might have honored themselves by a like recognition of John Davy.

Never was a medical officer more active and sincere, more zealous and intelligent, in the execution of his public duties. These were always so paramount with him that he neither would nor could endure negligence or incompetence, much less such shams as are too common in the army. And his conduct in this respect was alike to superiors and inferiors; so that, as is sometimes the case with officers devoted conscientiously to their duties, he was generally not much liked, especially by those who had but a superficial knowledge of him. Indeed, when he was justly recommended as the best man to succeed to the highest office in his Department, it was significantly asked—"Would he be likely to give any trouble?" So he was passed over in favor of a very inferior man, and retired finally to Lesketh How, near Ambleside, in the Westmoreland Lake District. There he continued his scientific and literary pursuits, only interrupted by his recreations. These last, as already mentioned at the end of Chapter II., were chiefly angling and country excursions, and the composition of his two books—'The Angler and his Friend,' 8vo., London, 1855, and 'The Angler in the Lake District,' 8vo., London, 1857. They contain pleasing evidence of his love of the sport and rural things; but with all his enthusiasm for such amusements, he never forgot, and was fond of expressing, that our wit and invention were bestowed for higher purposes than such pleasures as fishing, and that, however delightful they may be, they were innocent only when pursued as mere relaxation from graver occupations. Some of his other books were written and published during his retirement at Lesketh How.

The circumstances under which he and I retired from the army, and the happy angling we had enjoyed together, are intimated in the Prefatory Notes to his two piscatory books. Of most of the stations where he did duty he has left memorials. Thus we have his 'Account of the Interior of Ceylon,' 4to., 1821; 'The Ionian Islands and Malta,' 2 vols. 8vo., 1842;

'The West Indies before and after Emancipation,' 8vo. 1854; 'On the Diseases of the Army,' 8vo., 1862, and some others. His three 8vo. volumes of Physiological Researches are less known than they should be; but they will long remain valuable for reference on points not elsewhere so well explained by original experiments and observations.

He died at Lesketh How of pneumonia, not long after the death of his friend and neighbour, the poet Wordsworth, of the same disease. In person John Davy was rather small and spare, and one of his legs was a little bent by a fracture in early life. With a fair and somewhat florid complexion, he had dark hair and light hazle eyes. But his mind was his brightest possession. In its guileless simplicity dwelt the warmest and best affections, and that love of physiological science and its cultivators which was never degraded by any alloy of envy, jealousy, or rivalship.

"He broke no promise, served no vulgar end,
He gained no title, and he lost no friend."

CHAPTER X.

To the forementioned example of the influence of Nature in allying English minds, may be added an interesting one relating to foreign parts:

'The schoolboys wilder than the winging swallows,
Far from the master with his looks severe,
Bounded like fawns, to gather weeds, marsh-mallows,
And primrose blossoms to the young heart dear.'

These lines occurred—if my memory be correct—among the critical articles of the 'Saturday Review,' and were written by a Hindoo girl, named Toru Dutt, of the remote clime and race of India. She died at the

early age of twenty-two, not before she had composed verses which seem like echos of our own Cowper and Wordsworth.

In the last Chapter some sad instances are given of eminent men failing in a just appreciation of one another. However, on the contrary, it is cheerful to remember the more generous conduct in this respect of Milton and Gray long ago, and to note one of several examples of the like generosity in our own time. Keats, in a letter to Haydon, dated September 20, 1816, paid this tribute to Wordsworth:—

> 'Great spirits now on earth are sojourning,
> He of the cloud, the cataract, and lake,
> Who on Helvellen's summit wide awake
> Catches the freshness from archangel's wing.'

During one of my visits to Dr. Davy, I was introduced by him to Wordsworth at Rydal Mount, a mile or two from Lesketh How, and had afterwards the gratification of spending an evening with the great poet at his house. There he gave me instructions for a pedestrian and angling tour to Coniston Water, and thence over Walna Scar to the valley of the Duddon, the river so well commemorated in his Sonnets.

Of course I visited the church and grave of the Reverend Robert Walker and his wife at Ulpha Kirk close to the river. This was the Gospel Teacher of whom Wordsworth sung so sweetly and truly:—

> 'His good works formed an endless retinue:
> Such Priest as Chaucer sung in fervid lays;
> Such as the heaven-taught skill of Herbert drew;
> And tender Goldsmith crowned with deathless praise!'

I found the memory of this Christian pastor still fresh thereabouts. An old woman at the wayside inn at Seathwaite, some three miles down the river, knew him well, and said he had been commonly known as 'Wonderful Walker.' When Wordsworth's lines and some of the Notes to his Sonnets were recited to her, she said they were all mighty well; but for all that he and his worthy wife were very thrifty, and had a sharp eye to business, and were quite knowing enough to make a good thing of it, as he sold his broth and other refreshment to his congregation at a price so low as to command a large consumption and sufficient profit; and notwithstanding his large family, which he brought up well, he left no less than £2000 when he died at the age of ninety. There seemed to be a touch of trade rivalship in her feeling; but she generously added that Wonderful Walker was a good minister, husband and father, and a blessing to the neighbourhood.

Wordsworth, besides being a teetotaller, was a frugal man. Longevity is common among the people of Westmoreland and Cumberland; and of this fact he had the prescience and prudence to take advantage, by buying from time to time, or moving his neighbours to buy, small annuities on the lives of the inhabitants, which were more valuable than those of the Northampton or some other Tables, on which the Government then acted. This I heard from some of the statesmen, his neighbours; and if true, it was probably the first instance in which a poet had thus outwitted the public financiers, and may be taken as a valuable example of provident economy in a great genius, in opposition to all Thomas Moore's mild twaddle in expiation for the reckless prodigality or immorality of such exalted geniuses as Sheridan and Byron; as if moral poverty were to be excused by intellectual wealth. Many illustrious men, like Shakspeare and Milton, Pope and Southey, Newton and Wren, Michael Angelo and Hogarth, were by no means above a commendable regard to a just frugality.

I know not whether poets are more liable than other mortals to diseases of the eyes. Homer, Milton, and some of less fame, were blind. Cowper often complained in his letters of his eyes; but, judging from the portraits

of him by Romney and Abbot, the disorder seems to have been confined chiefly to the eyelids. So too in Wordsworth, who wore a green shade over his eyes when I saw him, and complained much of their weakness, which was due to a slight but chronic lippidude.

In the course of the forementioned evening at Rydal Mount, the poet was in a cheerful mood, chatting pleasantly of old friends and books. The day before he had been giving a treat to a large party of children, and the stools, forms, and tables still remained on one of the terraces in front of his house. He recounted his delight in rummaging stalls of old books during one of his visits to London, and mentioned particularly old folios of Dryden's and Cowley's poems, and of Milton's prose works, which he had rescued for a trifle from their ignominious exposure. Then he jumped up from the tea-table, and brought from his library the very volumes of those books; and remarked that, if any one of them could tell its own true history, it might be an interesting and instructive one. And he added that he wondered, seeing the present exhuberance of periodical literature and the sharp and anxious search for novel subjects, it had never entered into the head of any writer to compose Bibliographical Tours in the Metropolis, since the old books which were scattered about the stalls would afford ample materials for extensive and agreeable literary gossip. 'And,' added an old lady of the party, 'of delightful morality too, if dear Charles Lamb had undertaken it.' Wordsworth spoke of John Dyer and Charlotte Smith as two of our minor poets who had been scarcely esteemed as much as they deserved; and of how curious it was that Dr. Johnson, whose mind was so rich in many parts of English literature, should have been so poor in an acquaintance with the Elizabethan dramas and other poetry of that era; and that, though he was born not far from Dovedale, and must have often been near or in it when visiting Dr. Taylor and Ashbourne, he has never given so much as a single notice of Izaak Walton or Charles Cotton, and yet the latter was a better poet than many admitted into the celebrated Lives. To which one of the old ladies added, 'Aye, but if Johnson had examined the subjects he would have rejected the author of Virgil Travestied and other not very decent burlesques.'

Reverting to new subjects for Magazines, it was pleasantly remarked that an essay On the Danger of the Title Deeds of Noblemen's Estates might prove an amusing article; for the japanned cases paraded on the top shelves of solicitors' offices, and ostentatiously lettered with the names of Dukes and other aristocrats, were commonly nothing more than a beggarly account of empty boxes, as if their contents had been stolen; in fact mere dummies to excite admiration at the lofty connexion and business of the lawyers.

Illustrious Cockneys was another subject suggested for periodical articles. Wordsworth mentioned that such great names as Chaucer, Spenser, Ben Jonson, John Fletcher, Dr. Donne, Cowley, Milton, Pope and his biographer (Ruffhead), and critic and Dennis, Gray, Churchill, and many others born within the sound of Bow Bells, would afford ample materials for much interesting and instructive gossip. I may add that Churchill's name alone would recall stirring memories of his school-fellows at Westminster, among whom were such remarkable men as Bonnell Thornton, George Coleman, Cumberland, unhappy Robert Lloyd, Warren Hastings. Vincent Bourne, their master, might well afford matter for a chapter; and indeed the whole time of these distingnished persons at Westminster was rich in literary anecdote, tragical, comical, and farcical. The Nonsense Club there, of which most of them were members, including Cowper's life-long friend, Joseph Hill, fondly remembered thirty years afterwards by Cowper, when recalling a line written at the Club by Hill, as affording a happy example of a truly Homeric triple epithet—

'To whom replied the Devil yard-long-tailed.'

And there probably originated the Ode to Obscurity and Oblivion, in ridicule of Mason and Gray; and the funny exhibition of Sign Boards, in which Hogarth took an interest, and added some ludicrous touches to the features of some of the portraits.

As I have never seen any list of famous Cockneys I will here jot down such names of them as at present occur to my mind, and hope that it may serve to help some enthusiast to make a more perfect roll. Besides the foregoing names, the following may recall multitudinous associations:—The Poets Giles Fletcher, James Shirley, George Lillo, Herrick, Richard Crashaw, Matthew Green, Richard Savage, Scott of Amwell, Charlotte Smith, Hookham Frere, Lord Byron, Keats, James and Horace Smith;—the Novelists De Foe, Horace Walpole, Ann Radcliffe, Monk Lewis, Plumer Ward, Theodore Hook, Tom Hood; the Architects and Artists Inigo Jones, Vanburgh, Sir Christopher Wren, Grinling Gibbons, Hogarth, Banks, Bacon, Wilton, Blake, Morland, Nollekins, Hoppner, Harlow, Collins, Turner, Calcott, Landseer, Cruickshank;—the Dramatic Actors Colley Cibber, James Quin, Jack Banister, John Henderson, Ann Oldfield, Dickey Suett, Joey Grimaldi, John Reeves, Ellison, Kean, Charles Matthews, George Alexander Stevens, Liston;—the Divines Ingulphus, Bishop Andrews, Archbishop Leighton, Isaac Barrow, Zachary Pearce, Cardinal Newman. Cockneydom may also claim the Earl of Stafford, John Hampden, John Stow, John Leland, Samuel Pepys, Bolingbroke, Charles James Fox, the Duke of Ormond, Sir William Temple, Thomas Tyrwhitte, Dr. Heberden, Perceval Pott, Dr. Kitchener, Dee the astrologer, John and George Dolland, General Oglethorpe, William Penn, Soame Jenyns, Canning, Lord Beaconsfield, Professor John Martyn, Nevil Mackelyne, General Sir Charles Napier, Sir Robert Wilson, Bonnel Thornton, George Coleman, Horne Tooke, Jeremy Bentham, John Ruskin, Michael Faraday.

Looking back to the Lake District;—During my return walk with Davy from Rydal Mount to Lesketh How, we chatted about the ignorant or malicious treatment of Dr. Thomas Young, Coleridge, Keats, Wordsworth, and other eminent men, by the periodical Reviewers, and of the mild manner in which Wordsworth had met the attacks, and of the fierce replies by Coleridge in his Biographia Literaria, and by Hazlitt elsewhere. Whereupon Davy remarked he had heard Wordsworth commend the services to letters of both the Edinburgh and Quarterly Reviews; but adding that their bad conduct was too frequent, and a list of their chief articles and the authors' names would point a moral and adorn a tale in the history of English literature. And such a narrative we thought would be admirably suited for magazine articles, especially as they might include an amusing display of incongruous decisions, such as those of Jeffrey on his intellectual superiors—'This will never do,' and 'I fear Carlyle will not do . . . . he is very obstinate, and I fear very conceited.'—Like Voltaire's impudent and impotent judgment of Aristophanes, *Ce poëte comique, qui n'est ni comique ni poëte, n'auroit pas été admis parmi nous à donner ces farces à la St. Laurent*—with the lugubrious attempts by the critics to puff mediocrity and dullness into fame, in discoveries of embryo Newtons or Miltons never since heard of, and stupidity or poverty in works, such as those of Byron, Coleridge, Wordsworth, Keats, and Young, now and evermore adornments of our literature and science. The two great Reviews have been offenders in this way, but the Edinburgh far the most so; and all this the more remarkable when we consider the vain rhetorical flourishes and harmonious dogmatism of the great critics. Maucaulay's about the tenderness and chivalry of Milton's domestic love, and Pope 'all mask and stiletto,' are samples of this flagrant misrepresentation. Milton's wives and daughters—'those fair defects of nature'—would have smiled grimly at such fustian; and nothing is better known in literary history than Pope's 'rocking the cradle and reposing age' in his care and tenderness

for his mother up to her end at the age of ninety-one, and his eloquent and just tribute to Addison, notwithstanding a little and later fling at Atticus, after a compliment to him, before a tender memory of Gay, in the 'Epistle to Dr. Arbuthnot.' Pope's noble Prologue to Addison's Cato is familair to most readers; and here is the concluding couplet of his generous 'Epistle to Mr. Addison,'—

> Ennobled by himself, by all approved
> And praised, unenveyed, by the muse he loved.

Macaulay indeed agrees with another Whig partisan in reviling the character of the Tory poet. But parts of Horace Walpole's gossip, in his letters to Sir Horace Mann, May 17 and June 4, 1749, about Pope, Bolingbroke, Mallet, and the Duchess of Marlborough, are in some respects discordant and hardly credible. We may believe Walpole's malevolence when he writes—"It is comfortable to hear such villanies of such great men;" and his credulity when he states in the very same letter that the poet Prior was probably a brother of the Duke of Dorset. After all, while deploring Pope's frailties, we know that he was admirable for his filial piety, and for his tender and steady friendships with such men as Atterbury, Arbuthnot, Warburton, Swift, Gay, Dodsley, Spence, the gentle Parnell, Bathurst, Fortescue, Allen, and others. Whenever did Walpole or Macaulay descend from the dignity of their pensions or sinecures to take by the hand a poor servant who had some literary talents and much worth? Or when did either of those happy placemen help a young and wretched man of poetical genius? Yet such was the friendship of Pope for the original publisher of Young's Night Thought's, Dodsley, who was a footman in the Lowther family. Pope helped him to £100, and the miserable Savage with at least £20 of his annuity. Can Walpole or Macaulay be credited with any such benevolence or generosity? On the contrary much of Horace Walpole's long life was devoted to wholesale slanders, as may be too well seen in the spirit and letter of his posthumous Memoirs of the last Ten Years of George II., and to mean jobbing about his pension. But poor Pope, like his friend Gay, never was a pensioner; nay, was left to the cold comfort of chanting that he was "taxed and fined, denied all posts of profit or of trust;" he refused a secret pension from Craggs, and died not worth more than three thousand pounds.

But these digressions are leading away from Rydal Mount, and it is time to return thither, to complete my recollections of Wordsworth. It was pleasant to hear such a man candidly speaking of literary and especially poetical merit. He said it might be questionable whether an over-measure of fame had not been awarded in this direction. Homer, Thucydides, Herotodus, were names better known than those of their heros. On the other hand the very names of the creators of numberless great works of architecture, of the finest mediaeval structures, are lost and buried in their still beautiful forms or ruins. We have, indeed, dim notices of such men as Gundulph and William of Sens, but still less, or nothing, is known of the architects of many magnificent and marvellous buildings, and of the beautiful small churches which happily still adorn our country. The names of the designers have quite perished, and rational curiosity about them is so commonly fruitless as to be chilled. Not so in literature, always excepting the glorious old ballads. Persevering searches are still made for the author of the Letters of Junius, and of some other everlasting things; but not as to the Architects of Whitby, Fountains, and Tintern Abbies? Who built Hereford Cathedral? By whom were carved the beautiful ornaments, the masterly monuments, the busts and statues, the noble and ignoble grotesques of the best period of gothic architecture? Posterity will not be thus in the dark concerning such excellent poems as the Ancient Mariner;

nor of Rob Roy's Grave, added a lady who was present,—I think Miss Hutchinson, Mrs. Wordsworth's sister.

Of the Ancient Mariner I hazarded the remark that the much admired image—

> 'Day after day, day after day,
> We stuck, nor breath nor motion;
> As idle as a painted ship
> Upon a painted ocean'—

bears some resemblance, no doubt accidental, to a figure in the 'Thanks for a Summer's Day,' by Alexander Hume, a poet who died about the end of the sixteenth century:—

> 'All trees and simples, great and small,
> That balmy leaf do bear,
> Than they were painted on a wall,
> No more they move or steir.' (stir).

On this Wordsworth observed, 'Very good; but Coleridge has the the beauty of contrast, no mean advantage, of a still image on a restless element.' We did not remember at the time good Dr. Donne's lines on a calm which Ben Jonson, as Drummond of Hawthornden tells us, quoted with much approbation:—

> '————And in one place lay
> Feathers and dust, to day and yesterday.'

At the same time I thought that in Wordsworth's noble 'Laodamia,' a beautiful couplet,—

> 'Elysian beauty, melancholy grace,
> Brought from a pensive though a happy place'—

was somewhat akin to Gray's lines in the 'Ode to Vicissitude,'—

> 'And o'er the cheek of sorrow threw
> A melancholy grace.'

And Wordsworth's admirable little poem, beginning 'She was a phantom of delight; and Byron's Melody 'She walks in beauty like the light,' also his description of the Giour's Leila, 'She was a form of light and life,'—have always appeared to me as in some respects echos—lovely indeed—of verses by Cowper, which, not commonly appearing in the popular editions of his poems, I will add here from his letter, June 8, 1780, to the Rev. William Unwin:—

> 'Sweet stream! that winds through yonder glade—
> Apt emblem of a virtuous maid!
> Silent and chaste she steals along,
> Far from the world's gay, busy throng;
> With gentle yet prevailing force,
> Intent upon her destin'd course;
> Graceful, and useful, all she does,
> Blessing, and bless'd where'er she goes:
> Pure-bosom'd, as that watery glass,
> And Heaven reflected in her face!'

The garden-loving poet, Cowley, gave a pleasing image of a virtuous wife—

> 'The fairest garden in her looks,
> And in her mind the wisest books.'

But partial similitudes or parrallels however agreeable to trace, are no proofs of plagiarism. Very likely neither of the modern poets ever saw the verses now cited from Hume and Ben Jonson up to Cowper: any more than Wordsworth derived his good Lord Clifford, in the Feast of Brougham Castle, from the Lord of Lorne in the touching old ballad of that name.

Indeed such parallels might be made to afford a subject for an interesting and valuable chapter in the history of English poetry. You cannot, for example, read the splendid dramas of the Elizabethan era, without every now and then meeting passages which recall some in poets of our own time. A collection of these coincidences would be curious; and useful too in promoting the popularity of our greatest dramatists, in furtherence of the admirable work of Charles Lamb. At present many examples occur to my mind, but one only that I can cite off-hand with sufficient precision in the absence of books which I am unable to consult. The admirable lines in Coleridge's Cristabel, beginning—'Alas! they had been friends in youth,' seems like an echo of a passage in John Webster's tragi-comedy, 'The Devil's Law Case,'—

> 'I must tell you;
> To draw the picture of unkindness truly,
> Is to express two that have dearly loved,
> And fallen at variance?

Wordsworth spoke with some emotion of his deceased friends Coleridge and Lamb, of the exquisitely tender and original humour of the latter and of the vast learning and the genius of the former, and related some anecdotes of both that have been published either before or since. Also that of Walter Scott stealing away in the morning from the tea and water fare at Rydal Mount to get a little drink more to his taste at the Swan Inn at at Grasmere. Wordsworth, as already remarked, was a total abstainer from fermented liquors.

And this leads me to another digression, at present on the grave question of alcoholic liquors. Here were two sober and sagacious men, of the highest intellectual gifts, at complete variance, one eschewing such beverages altogether, and the other liking them in moderation. Probably the truth, as usual, lies in the mean. Paul the Apostle well knew the difference between the use and abuse of a good thing; he writes, in his First Epistle to Timothy, "Drink no longer water, but a little wine for thy stomach's sake and thine often infirmities." Then we have it seriously propounded by some zealots that the wine in this case was meant only as an external application; but an old woman is reported to have clinched the matter by the declaration—"Can't away with them teetotallars because they are clearly agin the Scripture; for when the brethren came to the Three Taverns Paul thanked God and took courage,—Acts xxviii, 15." We have noticed in chapter viii. p. 41, how good Izaak Walton approved of the moderate use of wine; and it is certain that fermented liquors, judiciously taken, may beneficially promote cheerfulness and digestion.

And of this I shall now relate a remarkable proof, which has not found its way into tracts or books. The case is mentioned in my fifth College Lecture, reported in the 'Medical Times and Gazette," December 12, 1863, page 610. A few years before, I had originally discovered and described and depicted the molecular base, which is the chief morphological element of the Chyle (see chap. iv., p. 20), and therefore of Digestion. A man had an abscess in the loins which degenerated into a fistulous passage, through which a white fluid was found to flow more or less abundantly. It was examined by many experts who could make nothing of it, till the late John Quekett declared that it was like nothing so much as the newly discovered molecular base of the chyle. Then it was found that the flow was most

abundant during the height of digestion, and that the oozing out of the milky fluid and the richness of its molecular base was regularly increased when the man took a moderate drink of porter or ale with his dinner. No doubt was entertained by the eminent surgeons who had care of the case that the fistulous canal in the loins communicated internally with the receptacle of the chyle. These facts, which have never been noticed in the controversaries about the uniformly injurious effects of fermented liquors, will have to be fairly met by the advocates of that extreme view.

Of the evils of drink the public in general and army medical officers in particular see much that no language can sufficiently censure. The enormities and horrors, of which a peculiarly detestable example has been given in chapter iv., p. 25, beggar all description. They are unspeakably demoniacal; no intelligent person doubts this; every good one mourns over the melancholy facts. Hogarth's dismal Gin Lane still speaks and has long spoken in vain; George Cruickshank's touching drawings have been no more effectual; so too has fared Cowper's indignant and eloquent invective in the fourth book of his widely popular Task; and all public and private remonstrances have been alike useless. Upwards of a quarter of a century ago the Grand Jury of Middlesex presented the vice of drink as the cause of the greater part of the poverty and crime in the metropolis. Middleton, in his 'Survey of Middlesex,' an old book, asserted and proved that in his time, 'the increase of public houses was more ruinous to the lower orders of society than all the other evils put together.' Even lately the able and zealous divine, Charles Kingsley, was wailing that some of his most important ministrations for the good of the poor were quite thwarted by seven pot-houses in his little parish of eight hundred souls. I have counted four drink shops in a village of less than two hundred population. They have too, besides their other misdeeds, become in many places dens of gambling and trysts or resorts for burglars and others of the criminal class. Yet we have an army of benevolent people, lay and clerical, ever wasting breath and ink to tell us what we already know and have long known too well. Societies, Leagues, Brotherhoods, Sisterhoods, and other organizations zealously co-operating in such charitable verbosity. They have their panaceas too, such as early closing, Sunday-shutting, local option, permissive bills, coffee-taverns, purchase of drink-shops and vested interests, and the like.

But remedies of this sort, however kindly meant, have the fatal defect of beginning at the wroug end and finishing nowhere. If we were dealing with the even less nuisances of gaming-dens and brothels, should we think of purchase or compensation or vested rights and interests? Were those of turnpike trusts or tolls and stage coaches entertained when the railways came? If we should desire our physicians when treating our diseases to regard only the symptoms or results and neglect the causes, we might deserve and expect to be considered as not very wise. And surely nobody of common intelligence can doubt that the overwhelming numbers of gin-palaces and other drink-dens, and of their proprietors or tenants, are the cause of the widest mental and bodily misery; that they are and have long been increasing and ought to be swiftly diminished.

And so we come face to face with the fount of the pollution, and plainly see that nothing short of removing it can be effectual for the destruction of its foul currents. And this good service would be done by a competent and just legislature. Prevent brewers and distillers from investing enormous capital in the promotion of the iniquities, and maintaining them by legions of magistrates, lawyers, agents, idle publicans, and the whole rabble of the baneful confederacy; then the traffic in and monopoly of all this wickedness—of the modern Moloch, horrid king—would cease. Any other treatment is simply and idly nibbling at the symptoms, mere botching, while the cause of the woeful and fatal distemper, which is

destroying the life of the nation, is left to its dreadful course, and the hideous malevolence of a bloated and festering Mammon rules in triumph.

We often hear from this wicked confideracy the cuckoo-cry—'You can't make people sober by act of parliament.' But this is only a half-truth. You can and ought to suppress inducements to drunkenness, and to this end legislation might do much; nay even in great measure suppress the evil, as was done in Norway under my own eyes many years ago, and since at Gothenberg in Sweden. During the journey, to be mentioned in the next Chapter, we accidentally spilled our bottle of brandy, which we thought to replace either at Skein or Kongsberg. But we found that, by a recent law, no spirituous liquors could be taken out by, much less supplied to, chance customers, though guests in the hotels might drink in moderation on the premises. We had to apply to the apothecary and magistrate of the town before we could get another bottle of brandy. Mr. Archer, the British Consul at Laurvig, and several other intelligent persons, afterwards assured us that the beneficial effects of this legislation were remarkable. And be it remembered that it was in an eminently free country, where there is no aristocracy but such as may be represented by peasant-proprietors. My companion, the only son of an English peer, growled something about 'the liberty of the subject.' What would he have said had he lived to see the free State of Maine curtailing drunkenness by a legal removal of the temptations thereto?

The doleful comedy of the perplexities of our government in raising the means seems to surprise nobody. Coquetting with a miserable tax on lucifer matches, tea, cocoa, and so forth, when everybody knows very well that an impost of about twenty per cent. on tobacco and spirits would add more than sufficient to the revenue and at the same time increase the happiness of the people. But no doubt we should have, in opposition, loud cries in the silly and blustering style about envying the refreshments of the poor man, the rich robbing the poor, but not a word, even in the sentimental mood, about protecting the poor from their most relentless enemy, their deadly poison, Attempts to do this would be met with monster processions in the pot-house interests, promoted by the brewers or distillers, and all their dreadful confederacy; bands braying, flags and banners flying; brawling about vested interests, the liberty of the subject, and all beginning and ending by asserting the dignity and sanctity of gin and beer, and blessing the brewers and their agents and cursing the aristocracy and clergy. But amid all this venal hubbub and wicked tyranny of Dives not a breath would be heard of the sordid and unholy jobbing of the rich traffickers in the vices and ruin of the poor people.

Yes, indeed, it is the despotism of capital, and not of the aristocacy, that is at once the source and moving power of the evil. The publicans are only the petty agents, not the cause, and so far rather to be pitied than condemned; for they are just as good as any other set of average men would prove under the like rules and all their sad temptations, in spite of which many inns and their hosts are and have long been of unquestionable respectability. It is the system and not its agents that is base.

Among all the chimes about the evils of drink, some are kept ominously silent. One or two of these may be rung here as having afflicted my latter years. The brewers and their people have got complete control, so far as regards the drink-evil, of a large part of the provincial press; nay, so powerful has the pothouse interest become as to overwhelm some useful trades, and actually to be very potent in the election of Members of Parliament. Pothouses divert the police from their most important duties of protecting lives and property. Burglars and such villains have plenty of ugly blows to bestow, but no drink or other pleasant cheer, and so give the police a far different reception from that which they habitually find behind the bar-door of the public-house, greatly to the satisfaction of the

thieves. All this mischief and much more in aid of the brewers' retail business, the expense of which ought to fall on them, they have contrived to shift to the ratepayers. When my house was forced by midnight burglars, my plate stolen, and my family so much frightened that one of them is never likely to recover, no police could be found till one or two had been unearthed, the night being dreadfully tempestuous, from the comfortable and favorite haunt. There, a neighbour told me, 'they were only seeing that all was right.' And next morning, urgent as the business was, the reply of the police to our application for immediate assistance was to the effect that we must wait, as there was the usual great pressure of public-house cases waiting for hearing.

But here again we must not blame the conduct of the servants for the conduct of their masters. The police do their duties quite as well as can be expected under a vicious system. Indeed the wonder is that it has not made them more inefficient. They are bullied in the newspapers and mercilessly beaten by ruffians, and are not fairly encouraged and protected. The fault, as already mentioned, lies much above them, and of that the police, like the public, are the victims; nor can any relief be expected before the tyranny of the brewers and capital has been stopped in its present triumph over the commonweal.

The keeping of pot-houses draws a multitude of stalwart men, either in possession or hope, from better employments. You may see the Boniface lazily lounging with a couple of dogs at heel, much to the envy of servants and workmen who toil for their living; while the expectant publicans, yearning for the like ease and dignity, may be observed, sometimes to their own ruin and often to the annoyance of their employers, eager to invest thus the savings of a life in a public house, and accordingly bowing with ridiculous servility to the brewers and their retinue. And the ladies of those Nabobs—'in all the glaring impotence of dress' and splendour of flunkies and carriages—are 'doing their piety' to show their sympathy with the sufferings of those very poor who have been degraded in providing pleasures and luxuries for those very rich. Alas! As true as ever is John Bunyan's remark—'There are some things of that nature as do make one's fancy chuckle while one's heart doth ache.'

So much for the drink-mongers. They will laugh and win. Let us turn from that wretched crew to cheerful Windermere; yet, like rural Selborne, mentioned in Chapter XVIII., not altogether free from the faults of poor humanity. When I was in that Lake District there was much unkind and perhaps untrue tattle about Harriet Martineau who lived in a pretty cottage near Ambleside. During my last visit to that neighbourhood I heard her spoken of, both in society and among the statesmen, in not very favourable terms. She was said to be an imposter so far as concerned her pretentions in her popular writing to knowledge of agriculture and other branches of rural economy. The statesmen expressed a dislike to any dealings with her in such matters. It was asserted that, availing herself of the custom of the country to hire a milch cow, she would soon return the beast half-starved, pretend that it was diseased and she would cure it, and then demand another. Her cure was by the mesmerism which she professed, and practised on the cow, and then boasted of the cure thereby, though it was well known that the poor animal got better simply by the improved keep at home. And though the lady had all this faith in mesmerism her 'strong mind' rejected all belief in a God. And as to her details concerning Wordsworth in her Autobiography, as if she had enjoyed much intimacy with him, the best authorities in the Lake Country asserted that he disliked her, and that society there shared this feeling with him, chiefly on account of her anonymous scribbling, not always inoffensive, in the newspapers or elsewhere. In the same locality, Mrs. Southey (Caroline Bowles)

was blamed because of her contriving to get married to poor Southey when he had become childish, if not worse, and then making him discard from his home his most cherised female dependents. But though Caroline Bowles was thus censured by common report, the long friendship which she maintained with Southey's son-in-law, the Rev. John Wood Warner, must be taken as good evidence in her favour. These small memories had wholly faded until revived of late by the extravagant praises and loud pæans flowing in behalf of these eminent ladies in the public journals. A death-bed request of Burns was—'Don't let the awkward squad fire over my grave;' and it has been irreverently joked of the late Lord Campbell's biographies that they have added a new terror to death. But this awe seems now to become a joy to the living; for as soon as a distinguished person descends to the grave, there quickly follows a bewildering traffic in his or her memory, with such a chorus of drums and trumpets of the press, as never in like circumstance commemorated the burial of Shakespeare or Milton, Newton or Wren. In short we are reminded of what has been said of the nurses of Jupiter, making a noise to drown the voice of their god.

CHAPTER XI.

In the year 1847 I married Anne, third daughter of the late Richard Keown, Esquire, and sister of William Keown, M.P. for Downpatrick in the north of Ireland. She is a woman whose piety, love, and intelligence have always been blessings to herself and her family. Home was made by her one most cherished comfort in this life. By this marriage, there was issue four children, two of whom died in their infancy. George, our only son, was educated at the King's School, Canterbury, and proceeded thence a commoner to Pembroke College, Oxford, where he graduated B.A., taking a first class, and was some time Demonstrator of Anatomy under Professor Rolleston; and thence went out as naturalist with the Venus expedition to Rodriguez, and received the thanks of the Royal Society for his services on on that occasion. This son was born at 8, York-place, Windsor, in 1851. During his scholarship the Head Master of the King's School was Dr.

Mitchinson, a kind, able and zealous man, since Bishop of Barbados. He had the reputation of being too much addicted to the rod, and was accordingly well abused in the local newspapers. But he was beloved by the boys, and sent out good scholars to the universities, and patiently endured too much annoyance by the negligence or worse of many of his pupils. The question of flogging has of late become unnecessarily troublesome to parents and masters, and even to magistrates. Recently a gentle and meek and lovely woman seems to have thought so. In the fifth chapter of her novel of 'The Neighbours,' Frederika Bremer has a colloquy:—"I suggested that one should work by reason on children, and thus train them to be good men and thinking beings. 'Many ways lead to Rome,' returned she, 'but the way of the rod leads them much sooner than the way of reason. Of course you must operate on men by reason. But to be reasoning with children is to talk yourself hoarse, and get nothing for it. Teach the wolf the paternoster, and he will still be craving for the lamb. No, no, reason is a good thing, but it does no good with children. Those who will not obey father and mother, will yet obey the rod.' Remember the words of the son of Sirach, 'if you have children chastise them.'" Dr. Johnson and his friend Edmund Burke believed that the fear of the rod was good for the training of boys to eminence as men.

The summer of the year in which my son was born I passed in Norway, on a visit with the Honorable Colonel and Lady Frances Maynard, at their fishing lodge, called Stuberod, on the Lauven river, two miles above Laurvig. Thence excursions were made to Westfiordal, Porsgrund, Labrö Fos, Skein, Hitterdal, Digroo Fos, and Riukan Fos. The church at Hitterdal is said to be the largest wooden one in Norway and of the twelfth century; yet the wood is as perfect as ever, probably from the dryness of the climate. We left England by a steamship from Hull to Fredericksvern for Laurvig. I returned alone by way of Gottenberg, Copenhagen, Kiel, Altona, Hamburg, Hull, Boston, Peterborough, and Cambridge.

Sometimes little incidents will relieve the monotony of a sea voyage. On the very morning of our embarkation at Hull, for Norway, the skipper of the ship had entered into the holy bonds of matrimony, and had brought his wife to pass the honeymoon aboard. She was reported to be safe and private below in the captain's cabin, and not likely to appear before the end of the voyage. The sailors were whispering and tittering, and looking out to congratulate him and drink to his health and happiness as soon as he should appear next morning. Also a dandyfied passenger, a young Dane, was bent on doing his gentility as soon as possible. He was proud of his little broken English, watched his opportunity, and got before them all. He was wonderfully polite to everybody; and getting the first sight of the Captain, rushed up to him, genteely bowing with hat aloft and the following felicitation—"Good morning, Monsieur le Capitaine, I hope you have passed a happy night, and that your lofely and accomplished young bride is happy too at such an anxious time. Was she ever bin married before?" Whereupon the Captain looked daggers over his shoulders at the Dane; and, when giggles and grimaces arose among the crew, growled at him a profusion of epithets more emphatic than polite, much to the dismay of the foreigner and the increase of the amusement of all on board. And the joke was kept up much to our merriment during the voyage.

At the Danish capital are the originals in plaster casts of most if not all of Thorvalsden's works. In the Fruekirk the grand pilasters of the twelve apostles, the angel holding the baptismal font, the last supper, are all as they left the artist's chisel. Altogether they present a very remarkable and impressive spectacle, such as cannot be paralleled elsewhere in modern church decoration, if in the like kind of ecclesiastical work at any period, and may ultimately become the wonder of posterity. It is curious that this great master, especially in the small bas-reliefs in the Museum at

Copenhagen, had not wholly avoided the error, too common with artists, of making the women as tall as the men. In his library, still preserved entire at Copenhagen, it is noteworthy that there are no English books, so far as I could see from backs of the volumes protected by the wire lattice of the presses.

In Norway the air is surprisingly clear and drying. Its transparency forms one of the charms of Jacob Ruysdael's pictures. He studied there with his master, Alder van Everdingen, and how well and truly he was impressed by the waterfalls and the pellucid atmosphere of the country his works have proved. Probably we have never since had such a great artist in this line as Jacob Ruysdael. The dryness of the Norwegian atmosphere is well shown by its effects on dead animal matters. Of this the natives take advantage in the preservation of their scanty meats, such as slink lambs and calves, which dry quickly in the air, and so dried are kept for future use in their poor stews and broths. Fish taken out of the lakes and rivers in the summer become quickly dry and hard, and may be then preserved for future use. In suitable climates animal food might be thus kept for an indefinite time without salt or other preservative addition; and thus fish and the flesh of the Yak are prepared and made palatable food in Tibet, as described in Dr. Hooker's 'Himalayan Journals,' vol. 2, p. 183. The same practice in drying flesh and fish for food is mentioned by Dr. Edward Daniel Clarke, as seen by him among the Calmucks and some neighbouring people; see his Travels in Russia, &c., Part First, 4to, Cambridge, 1810. The North American Indians also dry the flesh of the buffalos and salmon in the same manner, as seen by Captains Lewis and Clarke, in their Travels to the source of the Missouri River, during the years 1804-6; when the dried fish reduced to powder, kept good for years in bulk, and became an important article in commerce. The Malays, as we are informed by M. Péron, in his *Voyage de Decourvertes*, dry the Holothuria or sea-slug to keep for food. And how successfully apples and other fruits are thus preserved is well known in North America.

Although no angler doubts the importance of a proper choice of artificial flies, it may be overrated. Some days one fly serves as well as another; but of course this will be when the fish are feeding freely and the wind, weather, and water in good order. Still the angler's success may depend more on his skill than on any particular fly. This was well proved by Lord William B. and Colonel Maynard. The former was sometimes successful when the latter and I failed, all using the same flies. Watching our rival in his successes, we always found that he contrived to cast his flies on certain streams beyond our reach. He excelled us much in a distant cast. But he attributed his success wholly to the splendid flies made for him by the famous Irish fly-dresser, Evatt, of the West End, London, of which ours were only imitations. Profiting by our observations we determined to try again. Lord W. B. had given Col. Maynard one of those precious flies, which the Colonel had accidentally left on the table at the house, when he strolled out next morning for a cast before breakfast; but finding when about to commence that he had nothing better with him than a worn out old fly almost bare, he added a little dressing to it, began fishing, and came back in about an hour with two goodly fish. "Aye," said B., "those Evatt flies are real charmers;" but looking at the one with which Maynard had been so successful, was quite puzzled. And no wonder, for he had made it extemporally out of a bit of his own ruddy brown whiskers, much to our merriment and the confusion of the "crack flies for Norway."

The intestines of some of the salmon taken in the Lauven, about three miles above Laurvig, we found infested with tapeworms (Taenia). They were, as usual, of great length and many joints or segments, but not so broad as the corresponding worms in man. In these instances the fish were in fine condition and excellent at table; no food was found in the stomach;

and the skin, as is commonly the case in fresh run salmon, sometimes had on it many of the little parasitic Entromostracans, known as the tide-louse of the salmon. The presence of the tapeworm in this fish, if not new to science, is curious; as salmon feed only in the sea or estuaries, it seems not easy to explain how or where or in what food the early or larval state—the scolex—of the worm was taken by its host. But perhaps the worm may have been bred from mere eggs gulped by the fish with food or water; as is supposed to be the case with those herbivorous mammalia which have unarmed tapeworms. In the present state of science, however, we cannot account for the entrance of these Entozoa into the salmon. In the voracious and omnivorous pig, the head quarters of Trichinae and other worms, we can easily trace their source; but in another Pachyderm extensive Trichinosis has been discovered, as noticed in the *Comptes Rendus*, June 2, 1879, though the victim in this instance was a young Hippopotamus, a purely vegetable feeder, which died in the Zoological Gardens at Marseilles. In the carnivorous and ravenous pike, which I have often found infested with the tapeworm, we may easily conceive how the scolex may have been swallowed in the prey, dead or alive, especially in rivers near towns, like the Stour at Canterbury.

Some seasons I passed in the Highlands of Scotland with Sir Robert Sheffield on visits to the late Lord Henry Bentinck. There, as the old song in 'Select Ayres and Dialogues' has it, I 'angled and angled again,' made many experiments on the temperature of the Salmonidae, and saw much that was interesting to me; especially at Inchrory, Ben Alder, Loch Ericht, and Glenavon, fights between stags and dogs. Also the noble originals, in fresco, on the walls of the mansion of Ardverikie, of many of Edwin Landseer's best pictures. By him too were rural subjects, and a portrait of one of the party, all painted in currant jelly by the same great artist, in the gaiety of his heart, on the walls of a room at Loch Ericht Lodge. A single deerhound is no match for a stag. One of the finest hounds at Inchrory, as I witnessed, having been slipped at a stag by the mountain side, brought him at once to bay, but was quickly killed by the deer's antler in the conflict. The stag never tosses or tries to toss a dog, after the manner of a bull, as incorrectly represented in some magnificent paintings by Schneider, but takes a deliberate aim at and pierces the foe by a dart horizontally sideways or forwards, like a bayonet-thrust, with the sharp antler. And thus this subject as I saw it had before been well and truly depicted by Landseer.

The magnificent and valuable hound so killed by a wound through the chest, in the very fury of his attack, afforded a good opportunity of ascertaining the state of the blood and muscles in an animal that had thus met death. Dissecting this hound about nine hours afterwards, I found the blood coagulated in the heart and great veins, and the muscles of the limbs very firmly stiffened, in conformity with my former observations, alluded to Chapter V., page 29.

In the course of a visit in 1862 to Aix-la-Chapelle, going by Calais, Gravelines, St. Omer, Lille, Brussels, Louvaine, Liege; returning by Louvaine, Malines, Ghent, and Ostend, I inspected such specimens of Flamboyant architecture as came in the way. The pulpits and sounding-boards were often made of huge blocks of wood, carved so as to typify the Temptation or other biblical event. The solid wooden mass sometimes fashioned for a canopy or sounding-block, occasionally representing a cloud with or without angels or cherubs, and often the head of the Tree of Life. All this was a curious contrast to the monotonous lineation of pulpit architecture in England. I thought it a pity that our Grinling Gibbons had not carved a pulpit for St. Paul's in London. Alike agreeable and novel were the bells and chimes of the churches, sounding the hours or less intervals of time, and occasionally playing delightful voluntaries. In the

Grue Hotel at Malines we were often pleasantly entertained by them during the night. They discoursed charming music at all times.

During the journey an official person who held a rank in the police somewhat equivalent to a major in the army, and who, in consequence of an introduction, treated our party with much attention, gave vent in an amusing manner to his wrath. This was an explosion against the vulgar assumption by low Englishmen of dignified titles. Showing, for example, passports in hand,—"Here is a fellow travelling in the ridiculous disguise 'of an Esquire; on referring to the 'London Directory,' we find that he 'keeps an oyster shop in ——— Street! Here is another Esquire who is a 'retailer of bread and biscuits! It is annoying that such fellows are thus 'absurdly taking to themselves a title of dignity to which they have no 'more right than to that of Duke or General; and that Esquires by birth or 'creation should not put down such snobbery. But to be sure the shop-'keepers are the legislators in England, and nurture a vulgar hatred and 'envy of their betters everywhere, and an equally low and tyrannous 'contempt for their dependants and fancied inferiors anywhere. And of 'course this spreads in one way or other, so that neither 'man' nor 'woman' 'remains, and even Christian names are by no means genteel. So it is all ''gentlemen' and 'ladies,' 'Mister' and 'Mistress,' 'Master' and 'Miss.' 'The only practical preservation of the proprieties is in your Universities 'and public schools, and these will be soon corrupted by your 'shopocracy.' 'English gentry are respected wherever known; but we are quite sickened 'by a horde of mean, paltry, catchpenny upstarts, who support at vast 'expense an insolent and venal newspaper press to throw filth at their 'betters at home and at respectable Governments abroad." Thus far this pleasant and bitter official. In conclusion, he might have added, like Corporal Nym, 'And that's the humour of it.' He seemed, however, relieved by letting off this his comical philippic when he saw us smiling at his pungency; he was, after all, a very kind and obliging man. His familiarity with vernacular English had been acquired during a long residence in London, we suspected, as a police-agent; and he so employed his experience as to let us 'see oursels as ithers see us,' and this is the only reason for noting his invective. To our remark that we had supposed that nothing could be more contemptible than the mob of false Dons and Counts on the Continent, he quite assented; only explaining that the cases were scarcely parallel, as these would not dare to assume such titles in official documents, and that when duly assumed they were a source of some little revenue to their Governments.

During my service in the regiment of Blues, the applications which I often received, without a fee, from the insurance offices, for private and confidential medical advice in their business, were always returned with contempt by me; and this had long been continued before Mr. Thomas Wakley so well and publicly succeeded in the same cause in the 'Lancet.' And now the practice of the offices has become more satisfactory to the medical profession.

CHAPTER XII.

THE LAST EMPEROR NAPOLEON, page 68—MY RESIDENCE IN IRELAND 69—DRS. MAUNSELL, JACOB, JAMES MACARTNEY, WILLIAMS, AND BALL, SIR HENRY MARSH, JOHN JAMESON, 69-71—UP THE LIFFEY, 70—POLICY OF GEESE, 71—ANGLERS AT GWEEDORE, 72—'A VOICE FROM GWEEDORE' AND MR. FORSTER'S VIEW THEREOF, 72—GODWARD AND MANWARD. 72—CA'ING WHALES AT DUNDRUM, 72—I AM ELECTED HONORARY FELLOW OF THE COLLEGE OF SURGEONS IN IRELAND, 73—AND TO THE COUNCIL AND PROFESSORSHIP OF ANATOMY IN THE LONDON COLLEGE, 73.

While I was quartered with my regiment at Hyde Park Barracks, an incident occurred which is not generally known; though it has some little historical interest, considering the subsequent eminence of the chief sufferer, Napoleon the Third, Emperor of the French. Before he had attained this exalted rank, he was living privately at Carlton Terrace, London. There he had received, by a forged introduction, two French persons, represented to be officers of rank and gentlemen of position. He was accordingly desirous of showing them the most courteous attention; and so also was his friend, Count D'Orsay, to whom too they had brought a sham introduction. The strangers, among other things, expressed a wish to inspect one of the regiments of the Household Brigade of Cavalry in barracks, more particularly as regarded accoutrements and internal economy of the corps and the horses in their stables. Napoleon having taken the proper steps to get this favour granted by the Blues, then quartered at Hyde Park Barracks, his friends availed themselves of it. They expressed much approbation of all they saw, and one of them took a great fancy to an officer's charger, delicately insinuating how much he should like to possess that animal if money could purchase it. A very stiff price was named, with seeming carelessness, and the bargain struck without much ado, greatly to the satisfaction of both buyer and seller, and the horse was duly delivered soon afterwards. But a few days having passed without any appearance of the purchase-money, inquiry was made, when it turned out that the "distinguished French officers" were nothing better than clever swindlers. The transaction caused some merriment at the barracks, because the officer who had thus disposed of his charger had the character of being so wide awake in such matters as to be quite ready to take care of his own interest, whether against foreigners or natives. As Captain Richard Howard Vyse has long since been dead, and as he was an honourable man whose morality in horse-dealing was as good as that of his neighbours, there remains no reason to conceal his name. He was the sufferer on this occasion, as we supposed, for at least once in his life.

But no! Napoleon having been referred to, at once sent a cheque on his banker for the amount. It is pleasant, after the fall and other misfortunes of this eminent potentate, to record this instance of his honourable generosity in his previous exile and comparative obscurity. And how deserving of commendation his conduct was will plainly appear to any one

who will consider how few gentlemen would feel themselves liable to uphold the pecuniary credit of their friends, especially in the proverbially slippery business of horse-dealing. And, indeed, this was the general feeling in the regiment at the time, and the same ought to be endorsed by what Swift called Prince Posterity. A statement of the transaction having found its way to the Empress, soon after the death of the Emperor, a gracious acknowledgement was received, of which here is a copy:—

Camden Place, Chiselhurst, Aug. 21, 1873.

Madame Le Breton Bourbaki presents her compliments to George Gulliver, Esq., and is commanded by the Empress to convey her grateful thanks for the kind sympathy expressed in his letter received.

After 1853, when I had retired from the army, I resided with my family for about three years at Mount Alton, near the mountains and pretty river Dodder, about seven miles south of Dublin. In Ireland some few new friends were made and old left to me. Among these are or were Dr. Henry Maunsell, Dr. Arthur Jacob, Dr. Williams, Sir Henry Marsh, Mr. John Jameson, and Dr. Robert Ball. Maunsell and Jameson have cultivated minds, much natural shrewdness and friendliness; they are besides brothers of the angle and eminently hospitable; their persons spare and rather above the middle height. In his younger days Maunsell had distinguished himself in the obstetric line of his profession, and had gained a prospect of eminent success therein, when he left it for what Milton had long before truly called 'the troubled and hoarse sea of politics,' became editor and proprietor of the 'Dublin Evening Mail,' since become, under his excellent care, a morning paper also. While sufficiently serious in his proper business, he has often an amusing knack of seeing the droll sides of things, of which his preservation of the epitaph on Martha Gwynn, given in chapter xviii., is an example. His enjoyment of the chants about St. Patrick was lively, one of which has this burden,—

'He charmed ten thousand vipers blue
With psalms and sweet dis*coorses*,
And supped on them at Killaloo
In soups and second *coorses*,'—

an immolation worthy of the Saint, as he not only killed the vermin, but deliberately cooked and guttled them hot with all the cool malignity of pepper and salt. At a party when Swift's maxim was mentioned, that some people are so perverse that for want of a block they will stumble at a straw; 'Aye,' added Maunsell, 'and kill themselves too, like the poor man who lately committed suicide because he was tired of the everlasting buttoning and unbuttoning of his breeches!' Maunsell was author of the 'Dublin Practice of Midwifery'; and, with Dr. Evanson, of a goodly octavo 'On the Management and Diseases of Children,' of which a fifth edition was published in 1847, and which is still well esteemed. For some years he was editor of the 'Dublin Medical Press,' and he was the earliest professor of hygiene — then called political medicine — at the Dublin College of Surgeons, to the Council of which he was for several years Secretary. He and his friend Dr. Williams were often together in London concerning diplomatic business of the Irish College of Surgeons; and when I served on the council of the English College I had many opportunities of witnessing how ably they fulfilled their mission. Their friend Jacob was a pleasant little man, with an agreeable vivacity and humour and a touch of the racy Irish brogue. He had an acute mind, and an excellent knowledge of zootomy, perhaps derived from his old colleague and master, Macartney. Jacob was Professor of Anatomy to the Irish College of Surgeons. His discovery of the so-called membrana jacobi of

the eye is well known. He died, aged 84, on the 21st of September, 1874. For some years he was the Editor of the 'Dublin Medical Press,' and for a long time had an excellent practice as an ophthalmic Surgeon in that city.

Dr. James Macartney, when I lived near Dublin, was still fresh in the memory of numerous people at Trinity College in that city, where many racy stories were current about him. He was one one of the most eminent zootomists of his day in the United Kingdom. His elaborate and extensive article on Birds, published in Rees's Cyclopædia, more than half a century ago, has afforded a rich mine for later writers—English and German—who have too often neglected to acknowledge the source of their wealth. Even the latest German book on Comparative Anatomy, though professing to give the bibliography, does not once mention Macartney, but includes some of his plagiarists. He was a genial companion, full of pleasantry, not always very reverent; a great crony latterly with Jacob and Maunsell in Dublin; and formerly with Lawrence in London, where Macartney and Lawrence were engaged under Abernethy in teaching anthropotomy at St. Bartholomew's hospital,—an illustrious triad at that noble school! Macartney was for many years professor of anatomy at Trinity College, Dublin. He cared little or not at all for the commercial practice of his profession, but confined himself to teaching the higher branches of it during his long life; was much liked by his pupils, though he was strict in exacting from them due attention at his lectures and to his instructions. He was wont to speak often of St. Bartholomew's, and sometimes of how he had performed the operation of tracheotomy on a lot of men who were nearly suffocated in a sewer at Smithfield; as I learn from his old and excellent pupil Dr. Robert Boyd, and that the museum of preparations with which Macartney illustrated his lectures went afterwards to the University of Cambridge. He was among the last great teachers of the Hunterian school, and probably the oldest alive in his time. He was born at Armagh in 1770, and died in 1843. His death was very sudden. His amiable wife was blind and used to retire a little before him to bed, while he sat up to smoke his pipe; and one night he remained behind so much longer than usual that she arose, and groping her way downstairs to his room stumbled over his corpse on the floor. As he lived during the full tide of the Hunters and Abernethy, his life would afford an interesting chapter in the history of anatomy, and I am glad to hear that a biography of Macartney is likely to be undertaken by Dr. E. P. Wright, professor of Botany, at Trinity College, Dublin.

Marsh lived in Merrion Square, where he had a very large practice as a physician. At his door the visitors and patients were much annoyed by mobs of beggars, who were ever and anon dismissed by his servants' menaces—"Give! we have nothing to give here but good advice; and the best for the whole lot of you just now is to clear out of that," an injunction which was humourously enforced by a flourish of the fist. Marsh had a pretty retreat at the Strawberry Beds on the banks of the Liffey, about six miles above Dublin, and there he was wont to unbind among his friends. I much enjoyed his elegant hospitality and the beauty of the country on those occasions. He had fair hair and complexion, and in stature was rather below the middle size, much like Brodie in this last and some other respects, and but for an accident would have adopted the same branch of the profession. Marsh showed me his lame finger which had unfitted him from the practice of surgery to which he said his taste originally inclined. A little further up the Liffey is Marley Abbey, where Esther Vanhomrigh, Swift's Vanessa is said to have died a victim to that Dean's severity. But even if this be true, Horace Walpole's malignant and by no means decent gossip on the subject is scarcely credible. When I visited Marley it was just such a secluded and melancholy place as a lovelorn damsel might choose to nurse her hopeless passion in. Still a few miles higher up, the charming Liffey inlays a pastoral vale of exquisite loveliness and fertility,

enlivened by the waterfall of Pollaphucha between the bold rocks, about four miles beyond Blessington. At that little town we made our head quarters during a summer's visit to the district, and there saw spread out to dry in front of the cottages a profusion of grass-stalks, which on examination proved to belong to Cynosurus cristatus or Dog's-tail grass. These are left entire by the cattle and sheep on the pastures, and are gathered by women and children, who thus find a novel and fitting industry, selling the bents to intinerant dealers, probably for some sort of straw-plaiting. A few years before, Cobbett had, in his 'Political Register,' made much ado about such work for the English peasantry, and no doubt would have exulted had he seen his instructions at work in Ireland. With his usual assurance he loudly proclaimed that this kind of plait would rival if not surpass that of Leghorn for head-gear.

Jameson is the head of the great distillery at Bow Street in Dublin. Like most brothers of the angle, he has cordial friendship for his companions and a genial and liberal bearing to his dependants. Hence he is deservedly well beloved. He might be met with in due season on the Irish Lakes and rivers. With him I have enjoyed many a day's fishing at the Westmeath lakes and the rivers in Donegal. The kind hospitality of Mrs. Russell was exercised at Dunlewly, Gweedore, where, near her house, she had built a little church of the beautiful marble of the district, at the foot of the Errigal Mountain. Sir Humphrey Davy has left a memorial, in a poetical address to Mucnish and Errigal, of his angling tour in that country.

Ball was a tall man with dark hair and a pleasant manner. He was the zealous and excellent honorary secretary of the Dublin Zoological Gardens, and director of the University Museum. His name was pretty sure to crop up with current novelties concerning the animals in the menagerie at the Phœnix Park and elsewhere in Ireland. Interesting lectures were given by him occasionally on zoological subjects. He was the friend and correspondent of the eminent naturalist, Wm. Thompson, of Belfast, and was wont to indulge in agreeable talk about the ornithological rambles they had enjoyed together. One of them to Achil Island, Mayo, with the sea-eagles and Cornish choughs seen there, was apt to be dwelt on with fond enthusiasm.

Mr. Ball and his friend might have become acquainted with a more interesting bird-life nearer home, in a wild part of the Queen's County, about seven miles from the Bog of Allan and the same distance from the nearest town. I know not that the present story of the geese has ever found its way into any book of ornithology, though I gave some notes on the subject, years ago, to Mr. Frank Buckland. A gentleman with his large family occupied a house in the forementioned situation, and at the back of this residence there was a large farm-yard, in which he nightly penned his flock of more than a hundred geese. The watchfulness of these birds has been well known ever since the time of Lucretius; but I know not that the facts now to be given are yet current. An old lady of the family and of unimpeachable veracity, was an eye and ear witness of the conduct of the geese for two or three years. At that time the country was terribly disturbed by incendiary fires and other outrages, and the respectable people were dreadfully frightened, and kept so for many months. But the geese effectually kept watch and ward, and exercised a discipline as curious as it was serviceable. They all, except one, sat down in a regular circle, while that single geose stood on one leg in the centre of the ring. Then they were quite quiet for an hour, at the expiration of which the central sentinel gave a signal, when all the rest would rise at once and clap their wings, and he take his seat in the ring, one of them supplying his place in the centre. These proceedings were repeated every hour during the whole night, and so regularly as to be no bad marks of the passing time. But if any noise, however slight, occurred near the flock, such as a passing human footstep

or voice, the geese were all on the alert and gave a loud alarm. Thus the family in the house came to rely on the vigilance of the geese, and had so much confidence in them as to feel secure while they sounded the hours, and frightened when there was any irregularity in this respect. So the nocturnal conduct of the geese came to be a subject of conversation every morning at the breakfast table, and of many a cheerful chat at the cosy evening fireside in later and happier times, when it was always agreed that geese were better watchers than man and dogs.

The parental and spousal care of these birds was remarkable. The gander was an affectionate husband. During incubation he led his wife daily to water and took her place on the eggs, while he allowed her an hour or two for recreation, When the goslings first appeared, it was curious to see him put down his head among them, uttering the while a low soft note, as if talking to them and wishing them joy on the event; and he would stand over them when they came out for food, seldom taking a morsel before they were all satisfied.

If we are to believe, with modern philosophers, that man is but a fellow-mortal with brutes, he might at least copy some of their merits, and not heap vulgar indignities on his innocent fellow-creatures. Several current expressions, such as drunk as a brute, stupid as a donkey, blind as a buzzard, foolish as a goose, are lies and slanders that should be banished from human language.

At the hotel at Gweedore, established by Lord George Hill, the gathering of anglers was wont to be enlivened by the endless stories of Mr. Forster, a pleasant droll, and the tory land-agent of the whig landlord, Lord George Hill. Holding his master's book, 'A Voice from Gweedore,' in less respect than it was regarded by charitable persons at a distance, Forster would indulge in criticisms, giving a shocking view of the priests and people of the district. When asked about the affecting accounts of the 'Voice' concerning the "miseries and meek sufferings" of the poor destitute natives, his indignation would kindle up. He would exclaim,—"Poor wretched creatures, awful poverty and destitution, with 'the muck reeking at their doors, and not a single cart or even wheelbarrow 'to take the noisome and pestilential heaps away. No hope left them for 'help in this world! So they told his lordship for the 'Voice' in his book. 'Only they took good care not to let him know the whole truth, which 'includes the sad facts that while they are so miserably destitute, and 'besides have not a plough or pig among them, these poor, meek, and 'oppressed sufferers have a noble pride which soars above all such vulgari-'ties. Why, these desolate and oppressed creatures, in all this display and 'parade of abject poverty, can and do afford to possess secretly and enjoy 'the luxuries of an abundance of tobacco and whiskey, and such unlawful 'and expensive things as illicit stills, nets, firearms. And these of course 'involve waking o' nights and sleeping a-days, and immorality and filth 'always. O dear no! We don't descend to the vulgar and mean practice 'of cultivating the soil, destroying weeds, and inducing daily prosperity."

While in the north of Ireland, I heard a funny, if not instructive, anecdote concerning a point of casuistry. A lady had among her tenants two who troubled her with their disputes. One of these men, a blunt and plain person in his conduct, complained of the other, who was what Burns would call one of the 'rigid righteous.' The lady remarked that it was not likely that he who was so straightforward in his duties to God would be unjust to his neighbour. Whereupon the reply was—'Aye, my leddy, may be he is straight enough *Godward*, but sure he's unco *twistical manward*.'

During a visit to my mother-in-law, Mrs. Keown-Boyd, in the same district near Newcastle and the Mourne Mountains, more than twenty-five Ca'ing Whales were stranded at Dundrum Bay, May 14, 1853. I partially examined and dissected them, as described in the 'Proceedings of the

Zoological Society of London,' May 24, 1853. The sizes and comparative measurements then made of the animals, adults, and one mature fœtus, will be useful for future reference. And the discovery, at the same time, was very interesting of a supplementary lymphatic gland or thymus, on the fore front edge of each lung; and none the less so since M. Murie, in the transactions or Proceedings of the Zoological Society, 1870, has cited and misrepresented or misapprehended my observations on this point. The term 'globiceps,' applied by both the Cuviers to this animal is inappropriate, since I found its forehead to be quite flat, and the globular part wholly confined to the soft upper muzzle or snout. Hence Sphaerhyncus would be a better word, both anatomically and etymologically, than globiceps. This last has now been adopted as a generic term, though we see that it ought to be rejected, as 'glaringly false,' according to the rules adopted at the meetings of the British Association in 1842 and 1865, and since at Plymouth.

While I was residing at Mount Alton, I had the honour of being elected to the honorary Fellowship of the Irish College of Surgeons. Meanwhile I had, in 1852, been appointed to a seat in the Council of the Royal College of Surgeons of England, in which office I continued until July 1864. There I was unanimously chosen, after I had objected to the proposal, Professor of Comparative Anatomy and Physiology to the College, and delivered courses of Lectures on the Blood, Lymph, and Chyle, which were reported, with engraved illustrations, in the 'Medical Times and Gazette,' 1862-3. While holding that professorship my Hunterian Oration was delivered.

CHAPTER XIII.

DELIVERY AND PUBLICATION OF THE HUNTERIAN ORATION, page, 74—IGNORANCE OF THE VIEWS OF HARVEY AND HUNTER ON THE LIFE OF THE BLOOD, 74—VITAL ENDOWMENTS OF THE FIBRIN—CLUMPING OF THE RED CORPUSCLES IN BUFFY BLOOD, 74—HEWSON—JOHN QUEKETT, 74-5—UNTOWARD NEWSPAPER REPORT, 75—QUEKETT'S DETRACTORS, 75-6—ANONYMOUS DEFAMATION AND SELF PRAISE, 75—TWO BLACK SHEEP IN THE COLLEGE COUNCIL, 76—QUEKETT'S TASTE FOR PHYSICS, 76—AN HONEST JEW, 77—MRS. QUEKETT'S PENSION, 77.

The Hunterian Oration for 1863 was delivered to a very large audience in the Theatre of the College of Surgeons, and published at the request of the Council. Having long noticed and deplored the general ignorance of physiologists concerning the history of observations and opinions on the blood, as partly described in Chapter III, I took the opportunity of correcting it on certain points as regards John Hunter. While in the professors' room, with an assembly of some of the most eminent hospital surgeons and other scientific men, just before the delivery of the oration, I asked of the former whether they saw any difference between the conclusion of Harvey and John Hunter concerning the life of the blood? The answer was emphatically in the negative. Whereupon I remarked that I was just going into the theatre to correct or rather explain that matter. Accordingly, among other topics, I proceeded to describe the transcendental declaration of the inspired author of the Pentateuch, in comparison with the observations and opinions of Harvey and Hunter, on the life of the blood, and to show the special merit and originality of Hunter in regard to the vital endowments of the fibrin; also that he was the first to prove the aggregation of the red corpuscles during the formation of the buffy coat, as noticed in Chapter V. These facts were the more insisted on because they had wholly escaped the attention of preceding Hunterian Orators and commentators.

To a notice of the admirable researches of Hewson was added a warm commendation of the meek character and scientific labours of the then lately deceased John Quekett, with a defence of both these physiologists and their disciples of the British School against the cool and systematic conveyance of the results of their labors by the Germans. And some hint of the practice was the more needful because it was then much increasing, and especially favoured by some English physiologists who were well acquainted with the injustice and by many medical journalists who were ignorant of it.

In the course of the oration, dwelling somewhat fondly, in the tenderness of friendship, on the moral character of Quekett, his humility and constitutional sweetness of temper were described as not liable to be disturbed either by the sorry plagiarisms of his labours abroad or by the attempts of anonymous slander at home. A day or two afterwards, in one of the many commendatory notices of the oration in the newspapers, this passage was indicated as applicable to an individual among Quekett's former friends or colleagues. Hence came out, in one of the Medical Journals, a violent and vulgar attack on me; anonymous, though the author was shrewdly suspected under his cover of the editorial "We." This

diatribe, being of a kind that could only be justly treated with silent contempt, was thus left and the matter ended so far. In all the other medical journals, without any exception, the oration was treated with unqualified respect, and reported entire in some of them. The newspapers too were equally favourable.

The truth as to the unfortunate insinuation in the 'Daily News' is that I knew nothing whatever of it until it was shown to me in a copy of that paper, and then it was peremptorily repudiated by me. However, from facts which I learned afterwards, there seemed no reason to doubt the good faith, whether mistaken or not, of the writer of the notice which gave rise to the offence. Had I seen it before its publication I should have done my best to suppress it; for it irritated an old and tender sore. Quekett, some years before his death, had been depreciated in many ways; especially through anonymous articles—still under shelter of the editorial 'We'—in one or other of the critical journals of the time. With all this the writer of the newspaper report was familiar; and the facts were so notorious as to excite some speculation as to the writer of an article in the 'Quarterly Review,' vol. LXXXIX., page 412, September, 1851, professedly on Lyell's book of Geology, 'Life and its successive Developement,' but dealing in obvious puffery of a very different person, and an envious and false detraction of Quekett's miscroscopic researches on the bone-lacunae of Vertebrates. This anatomical subject became the more remarkable when, in 1860, Quekett brought it successfully forward, its true value having then been recognised, among his claims for admission to the Fellowship of the Royal Society.

As to the author of the article in the 'Quarterly Review,' suspicion was at once and always attached to the individual glorified therein, though ingenuous minds supposed this scarcely possible, while those who best knew his practices were not at all surprised; and of these last the reporter in the 'Daily News' was one. Indeed, when the suspected author of the criticism in the 'Quarterly' was told how the rumour affected him, he positively and solemnly denied that he had any hand in the matter, that any report that he had was "a lie, a d——d lie," and then declared that the article was written by a certain Cambridge Professor. Even granting this it may have been but a half truth, the glorification and detraction being by another person. And that there was another concerned in the business, either wholly or in part, seems to admit of no doubt. For shortly after the report in the 'Daily News,' I was shown, and then first saw, a manuscript which had been accidentally found at the College of Surgeons. Being asked whether I knew the handwriting I immediately named the writer. He was not the Cambridge professor, but the very person always suspected! The MS. was part of the matter already published in the 'Quarterly Review.'

Probably the whole truth of this business will in due time be so fully explained, by the help of such evidence as may be in the possession of the College of Surgeons, or of one or other of its officers, as to exonerate any innocent persons who have been unjustly suspected. For the detestable practice, so much indulged in by some scientific men, of anonymously writing, under shelter of the editorial 'We' in the journals, self-trumpeting at the expense of the fair fame of other people, yet requires a suitable name and reprobation in British casuistry. Through leading articles in the periodical prints, the envenomed shafts of secret malice, envy, jealousy and rivalship, are shot at their victims, from the wounds of which neither private persons nor public bodies have any protection, while the authors revel in this dastardly detraction and their own glorification. But it is an old practice, now become as vulgar as Holloway's pills and ointment. Swift, in the Preface to his 'Tale of a Tub,' tells us that—"Praise was originally a pension paid by the world; but the moderns, finding the trouble and charge too great in collecting it, have lately bought out the fee-simple; since which time, the right of presentation is wholly in ourselves." Never-

theless, that presentation was formerly more open and honest than to lurk under cover of the editorial 'We.' It was not behind the shelter of this figment that Dryden, Pope, and Swift attacked Buckingham and Shadwell, Dennis and Cibber and Atossa, Wood and Partridge and Wharton. Andrew Marvel seems to have had anonymous critics in view when he used the phrase "synodical individuals." Voltaire, according to the testimony of his friend Madame du Deffand, had recourse to the mean practice of anonymous writing to extend his fame.

If there was nothing quite so bad as this in the College Council, there were two eminent members of that body who were known to have indulged in anonymous rancour; the one in scurrilous attacks on a colleague or colleagues, the other by exposing or misrepresenting those proceedings of the Council as to which he was bound in honour, if not by oath, to respect the privacy. Yet such outrages were, and perhaps still are, so frequent as to be standing proofs of how little influence mere intellect, however high and cultivated, has over the moral sense, and indeed that ability is not wisdom. But so far as regards the Council of the College, such conduct was quite exceptional; for it was neither practised nor approved by a body of men who were quite incapable of a descent to a depth so low as that. Indeed, whatever may be thought of the corporate body, there were many generous and honourable minds in that Council. Still it remains too true that, while admiring the scientific attainments and eminence of divers scientific men, we have too often to deplore their want of a corresponding share of righteousness. Sir Archibald Alison, in the first volume of his History of Europe, expressed himself much to the same effect:—"Experience has now abundantly verified the melancholy truth so often enforced in Scripture, so constantly forgotten by mankind, that intellectual cultivation has no effect in arresting the sources of evil in the human heart; that it alters the direction of crime, but does not alter its amount."

Of the many anonymous attacks to which poor Quekett had been subjected an example has already been noticed; and of this several persons besides myself had such a knowledge as could not fail to excite some honest warmth of indignation. This led to the use of the untoward phrase in the Oration, and to the injudicious construction of it in the 'Daily News,' and hence the unexpected rancour of the individual by whom the phrase was accepted. Probably he thought he had good reasons for taking it to himself. But its meaning is and was simply that which is expressed by the words and the context, not to stigmatise any individual; much less to provoke a person who was not in my mind at the time, to take and fit a cap to himself, and then anonymously, under cover of the editorial 'We,' to abuse me as the maker of it. However, after all his furtive bluster, the College Council made short work of the business; for, so far from seeing anything exceptionable in the Oration, they voted unanimously their unqualified thanks for it, and a request for its publication. That the report in the 'Daily News' was not only without my privity, but was made in good faith by a writer particularly well acquainted with the conduct of one or other of Quekett's anonymous detractors, was known and a subject of amusement to several members of the Council of the College and other persons. I repeat that nothing whatsoever was known to me concering the offensive newspaper article until after it was published; and then I did not approve of it.

Besides his eminence in microscopical zootomy and phytotomy, Quekett had a nice taste for physics. He had collected a large number of miscellaneous instruments, and contrived an observatory on the top of the College buildings in Lincoln's Inn Fields, whence he made use of the dial-plate of the clock of the Houses of Parliament as a test-object for his telescopes. So, looking at the hands, figures, lines, and dots of the clock face through his glasses he would tell you their power to a nicety. Soon

after his death, his scientific effects were offered for sale to an Israelitish dealer, with whom Quekett used formerly to have transactions. But this honest Jew, Mr. Valentine, of Wych Street, at once declined the offer, because, as he truly saw and said, much more than he could give might be realised by a public auction. And so it proved, when the things brought a far larger price than Valentine might have bought them for privately.

When the motion came before the College Council respecting a pension for Quekett's widow, it was warmly supported by Green, Wormald, and some others, including myself. A few objectors there were, led by Mr. Arnott, who alleged the state of the College funds. He declared, however, in proof his kind feeling towards Mrs. Quekett, that he would himself give one hundred pounds if any other member of the council would do likewise. This was thought at the time to be a very safe offer; but soon afterwards Wormald generously paid the sum, and Arnott honourably fulfilled his promise. And so the widow netted two hundred pounds at once in addition to her pension.

CHAPTER XIV.

CHAIRMAN OF LIBRARY AND MUSEUM COMMITTEES, page 77—LIBERAL USE AND ABUSE OF THE LIBRARY, 78—HUNTERIAN FOSSIL INVERTEBRATES EXCLUDED FROM THE CATALOGUE IN VIOLATION OF THE COLLEGE CHARTER OR STATUTES, 78 —OBSTRUCTIONS, 78-9—COMPLETION OF THE CATALOGUE OF THOSE FOSSILS, 78—I RESIGN THE CHAIRMANSHIP OF THE MUSEUM COMMITTEE, 79—QUEKETT'S HISTOLOGICAL CATALOGUE OPPOSED BY STANLEY AND LAWRENCE AND SUPPORTED BY GREEN, 79—QUEKETT'S LETTER THEREUPON, 79—LAWRENCE'S POST-MORTEM EULOGY OF GREEN, 80.

While serving on the Council of the College of Surgeons I was for several years Chairman of the Committees of the Library and Museum. To the library I generally promoted the addition of books of natural science in preference to those of therapeutics, and seldom failed to object when needful to the absence of an index in either. It was not without some difficulty that the splendid copy of the original edition of 'English Botany' was bought, on my proposal, for the library. We were as often pressed to purchase worthless as valuable books. Whenever those of small or no merit were published, they were very likely to be brought to our attention, with the assurance that they had been "often inquired for." It was sometimes amusing to see how such a statement was seriously entertained. True no doubt it was that the authors' and publishers' friends, though not themselves in want of the books, were intent on promoting the sale of them. Such stratagems to effect this at the public libraries may be well known, but in some cases are little understood, even by experienced officials.

The College had scarcely sufficient credit, much less thanks, for the generous liberality with which it admitted all manner of persons to its library, often to the inconvenience of its members. Almost any decent man might with ease procure this favour, and perhaps by this time 'women's rights' have secured it also. It was much enjoyed by many foreigners, who were evidently bent on spending the day there, especially in winter, when the blazing fires in the great room and the current periodicals were the chief attraction. Contrast all this with the conduct of the libraries of the great Societies and other public bodies, some of the members of which made free use of our library, while they and their rulers might have been surprised if a request had been made for a fair reciprocation of such liberality. Of course the reading-room of our national British Museum is beyond the question.

In the Museum of the College of Surgeons, it was my painful duty to notice that, among the valuable specimens, the Hunterian collection of Fossil Invertebrates still remained out of the Catalogue. They were excluded. This was in open violation of the College-Charter or statutes and the periodical certificates of the Council. And this deplorable fact, considering the great interest and value of these fossils, and how highly Hunter had esteemed them, appeared a very serious default, difficult to excuse and still more to justify. Accordingly, in my place as Chairman of the Museum Committee, I asked the Conservator for explanation. The answer was to the effect that, from the multiplicity and weight of his labors in the Museum, he had never been able to find time to describe these fossils in the Catalogue; and that, before he could attempt it, he should have to visit M. Agassiz or his museum on the Continent, in order to get his assistance. "The little bill, no doubt, to be paid by the College," added Mr. Guthrie; whose face, in the portraiture of him at the College, never fails to recall to me this sly remark. I had inquired of the Conservator how long it would take him to catalogue those fossils, provided he were relieved from all other work in the Museum until the completion of the important and essential duty under consideration? To which he curtly replied, "I must decline to answer that question." This was not until Mr. Stanley had repeated it in a sort of apologetic manner. So the committee at once broke up; and Mr. Lawrence, Mr. Stanley, and Mr. Guthrie, who were all present at the committee, warmly expressed their disapprobation of the Conservator's conduct on this occasion, but not before he had left the room. And indeed it was remarkable that, although many old members of the Council often animadverted severely in private on the neglect in question, they would say little or nothing about it in their proper place at the official meetings of that body; only Mr. Guthrie was wont to vent some little home-truths on the point, which commonly produced no effect, as they were not formulated.

After all Mr. Guthrie triumphed quietly about the description in the Catalogue of the Fossil Invertebrates. He declared that "Mr. ——— would be able and willing to do the work, and that without any unnecessary delay, and, above all, without any foreign excursions of pleasure at the expense of the College." I think the gentleman named was Mr. Morris. Guthrie used often to say that a scientific auctioneer would get those fossils properly catalogued in a few weeks. At all events, the work was soon done very satisfactorily to all concerned, except perhaps to one person. The Conservator was never more questioned about the subject.

Mr. Green, at that time by far the most able counsellor, was thoroughly acquainted and dissatisfied with the neglected state of the fossils previously, and had spoken privately to me more than once about it. But he begged that I would take no action thereon, as he said it seemed impolitic to offend the Conservator. Sir Benjamin Brodie, more particularly and earnestly, also in private, requested to have the matter passed over silently, and for the same reason. Besides, as he remarked, any affront to the conservator

might involve the displeasure of his patron, a very exalted personage, and probably as on former occasions lead to unpleasant leaders in the 'Times' newspaper. "But Sir Benjamin, our own officer, liberally paid to devote his time to the museum in accordance with the Statutes or Charter, contumaciously refuses us the means of judging how we can best fulfil our duty as regards the Hunterian treasures in the museum; for years we have been signing incorrect certificates that all the Hunterian specimens are duly preserved and described in the catalogue; and is this farce in open violation of our duty to be continued to suit the convenience or whim of the Conservator?" To this my remonstrance the only reply was,—"No official objection has heretofore been raised. The signatures are only for formal compliance. No doubt the business is a serious one and a reform of it is desirable; but it is inconvenient to stir in it just now." Lawrence, Guthrie, and Stanley were of a different opinion as to the expedience of present action. But though they often privately expressed this view, they seldom if ever did so openly and formally in the proper time and place at the meetings of the Council, and Stanley and Lawrence would always be ready to oppose my effectual ventilation of the question there.

The delay in the publication of the catalogues was so correctly explained in one of the Prefaces as to offend the Conservator, who had then removed to another sphere; and the consequence of that Preface was that he threatened, through his lawyer, the Council with a prosecution, and under the advice of the College solicitor the offensive passage was removed.

When it plainly appeared that the College Council would not support me in the execution of my duties as chairman of the museum committee, I forwith resigned that office. It has already been stated that Mr. Guthrie got the Fossil Invertebrates catalogued by a gentleman who had no official connexion with the College.

The notice in the Hunterian Oration for 1863, that "the paramount duty, in regard to the Museum Catalogue, was not always performed without difficulties of a very unexpected kind," refers in part to the circumstances just explained. But there were other impediments, neither unexpected nor remediable, in the scientific deficiency of the ruling members of the Council; among whom Green alone had sufficient perspicacity to entertain a fair respect for those departments of anatomy and physiology which had advanced beyond his knowledge and that of the metropolitan hospital surgeons of the Council. These last, as I have heard them assert, could not perceive what the intimate structure of 'hard parts,' or indeed of any parts, of animals and plants could have to do with the Museum of the College of Surgeons; and, as may be thence inferred, much less with the practice and profits of surgery. Accordingly, as mentioned concerning Lawrence in Chapter III., poor witticisms—'for gentle dullness ever loves a joke'—were vented before admiring followers and expectants. And these last verily had their rewards. But Quekett held on the even tenour of his way, smiling at that which he could not openly discountenance or oppose. As it might seem invidious to give examples, one only, as related by himself, must here suffice. Writing to me at Mount Alton, November 15, 1857, he remarked—"Belfour is quite well and desires to be remembered to you; we only wish you were a little nearer us. I am exceedingly pleased with your kind wishes about the Histological Catalogue. Mr. Stanley and Mr. Lawrence came down one day with the intention of doing what they could to stop it; but Mr. Green happening to be present, they came to the decision that it was to go on. I think it a pity that such persons, who really cannot appreciate the importance of the subject, should have so much influence in the matter." Thus Green happily prevailed, as he so often did, in a good cause; and we have the most authentic representations of animal and vegetable histology that the world had then seen. Still the majority of the Council retained the defects mentioned in the next chapter.

Shortly after Green's death, his eulogy was pronounced in the Council by Lawrence; eloquently, of course, but merely harping on the Shakesperian words—"We shall not look upon his like again;" not extending even to a glimpse of the high and remarkable traits of the large mind which had drunk so deeply at the fountain of Coleridge. At the College of Surgeons is a marble bust of Green.

CHAPTER XV.

RESIGNATION OF MY SEAT IN THE COLLEGE COUNCIL, page 80—MONOPOLY OF THE HOSPITAL SURGEONS, 80-1—SCIENTIFIC AND COMMERCIAL DEPARTMENTS, 81—MERITS AND DEFECTS OF THE HOSPITAL SURGEONS, 81.—GREEN'S PERSPICACITY, 81—BRODIE AT PORTLAND PLACE, 82—JAMES WILSON AND HIS SON, 82-3—BRODIE'S LETTERS ON THE WINDMILL STREET SCHOOL, 82-3—SIR CHARLES BELL'S MUSEUM AT EDINBURGH, 83—HEAT OF SNAKE DURING FASTING AND INCUBATION, 84—REMARKABLE CASE OF BIG SPLEEN AND PALE BLOOD, 84—DESTRUCTION OF THE HUNTERIAN MANUSCRIPTS, 85—MY LETTER THEREON TO SIR JAMES PAGET, 85.

Early in 1864, soon after the unpleasant transactions related in the last Chapter, I resigned my seat in the College Council, because I was not elected in due course to the Court of Examiners. Previously I had been told by Wormald that it had been privately decided that none but one of the hospital surgeons would be eligible. At all events I was to go out of the Council, by rotation, a few months subsequently. But I reluctantly consented to present myself for re-election, in order to try whether the Fellows would confirm the unfair pretentions of the commercial and prevailing element of the Council, consisting of the metropolitan hospital surgeons, to continue the mercenary monopoly of the Examinations, to the exclusion of those physiologists and surgeons whose lives had been less devoted to the mercantile branches of the profession. Such had long been the unblushing conduct of the Council in despising many distinguished anatomists, among whom in my time was Joseph Swan—eminent in neurotomy but low in that guild of hospital surgeons—meekly retaining his seat in the Council after that indignity. Kiernan too was nearly excluded, being admitted by a majority of one only, in which I had the pleasure to vote. In my case, at the election on July 7, 1864, the Fellows did eventually confirm the offensive monopoly; but I was defeated after having polled 106 votes in my favour, which is a number far larger than was afterwards recorded for Hawkins, Skey, Wormald, Kiernan, and other eminent surgeons when they were candidates for re-election, and were superseded, on the Council. The circumstances of the transaction relating to me are given in the 'Medical Times and Gazette,' 1864, containing my letter, June 13, the

editor's articles, June 18, p. 685, June 25, p. 694, and more particularly July 2, p. 11, also letters from Judd and Loney, July 9, p. 39. There were six candidates for three vacancies, when Le Gros Clark, Hancock, and Curling were elected, and I stood fourth on the poll. The numbers were as follows:—Le Gros Clark, 147; Hancock, 139; Curling, 136; Gulliver, 106; Turner, 95; McWhinnie. 63.

The reasons for the monopoly of the profitable office of Examiner by the hospital surgeons were plain, and often declared more or less by themselves, either generally, or as in my case particularly. It was actually and successfully laid to my charge that I was neither one of the hospital surgeons nor engaged in active practice. I had no brass plate on my door. In fact they had long made an unseemly and impolitic distinction between the practical or commercial and scientific or philosophical branches of the profession. And this was the more deplorable because both these departments should, in the interest of all concerned, work harmoniously together. But whether for good or evil the invidious distinction was first made and regularly acted on by the Council of hospital surgeons, and the mercenary interest prevailed. We have just seen how, accordingly, two of the best anatomists were treated, and how I had the honour, though devoid of their merits, of suffering in such good company. All this refers to the time when we three served on the Council. The hospital confederacy then, and long before, reigned supreme; nor was there any relaxation of their combined opposition, during my time, to the scientific claims of members outside the circle of that sacred guild, at least so far as concerns the election of the Examiners. Low views of traffic prevailed against the higher considerations of science. But if no reform has yet been made, it cannot be much longer delayed; and long after it has been realized the foregoing facts will form a curious if not instructive chapter in the history of the Royal College of Surgeons of England. We have already seen, in Chapter XIV, how they attempted, happily without success, to suppress the noble Histological Catalogue.

Many of the hospital surgeons of the Council were men of great excellence in their day, and were so still while they eschewed meddling with things of which they had little or no knowledge, and with the fair claims of other persons. But that day had long since passed, and they remained in a sort of happy darkness concerning the onward march of science. They contemned that of which they were ignorant. Nay, they had not allowed themselves to be dragged along with the glorious procession of modern anatomy and physiology, but instead had habitually stood jeering by and throwing obstacles in its way. And accordingly these were the hospital surgeons leagued together in a compact guild for the purpose of enforcing and securing their exclusive pretentions and right to the pecuniary profits of examining their own pupils, and proclaiming the unfitness for this function of men as well, if not better, qualified for it, whether in or out of the Council. These last persons to be sure had never been fee'd by and were quite independent of those pupils and their masters. So far indeed did the hospital confederacy go, that for one supplicant of the younger brotherhood, Mr. Partridge, it was pleaded, in the melting mood, that he would be ruined if not elected an examiner; as if, as regards the fraternity of the metropolitan hospitals, the important office of examiner must sink to the depth of a refuge for the destitute.

But it should in justice be noted that Mr. Green had by far too large a mind not to perceive whither such conduct was leading; and that science, though no longer retaining his special attention, had of late years made such strides that the just claims of its cultivators could be ignored only by a sacrifice of policy and justice. How he saved the Histological Catalogue is related in the extract from Quekett's letter given in Chapter XIV. Perhaps something of the kind may be found in the biographical notice of Green, by Mr, Stone, of which Mr. South and others expressed much

approbation. Mr. Stone's memoir, which I have not seen, appeared in the 'Dublin Medical Press' soon after Mr. Green's death.

Brodie had retired at an advanced age and in bad health from the Council. During the course of my lectures at the College of Surgeons, he invited me to a *tête-à-tête* dinner at his then residence in Portland Place, and was there pleased to remark that he had heard such reports of those lectures as would lead him to expect that I should meet with the favorable consideration of the Council. But in this, as was afterwards proved, he was mistaken. Before that dinner, there had been a long official acquaintance, occasional communications on scientific questions, and some professional consultations between us. After dinner, he remarked that Mr. James Wilson, who was born in 1765 and died in 1821, is not badly represented in the portrait of him at the College of Surgeons; that he was one of the ornaments of the Windmill Street School; that his son, Dr. James Wilson, physician to St. George's Hospital, had been a 'Double first' at Oxford, but had not since realized the hopes excited by his University career. Brodie added, Mr. James Wilson highly excelled as a lecturer on and teacher of anatomy, and in skill of head and hand in the subject. On my remarking that his published lectures on the blood, which had been originally delivered at the College of Surgeons, gave no indications of an original mind, as they were little better than mere compilations, though possessing the great merit of ventilating an important subject, Brodie replied that Wilson's excellence consisted in exposition by an agreeable fluency and manner, also in making dissections and anatomical preparations. And this brings to mind some letters which Brodie wrote to me on the publication of the Sydenham Society's edition of Hewson's Works:—

"Brome Park, Betchworth, Surrey,

"My dear Sir, "September 4, 1846.

"Your edition of Hewson's Works will be a very acceptable addition to the libraries. The books had long been scarce, and even from the beginning Hewson does not seem to have enjoyed the credit to which his labors entitled him.

"On looking cursorily through the volume, it occurred to me that you had omitted Mr. Wilson as one of the Teachers in the Windmill Street School. The omission must have been accidental; for Mr. Wilson not only lectured in Windmill Street for twenty years, but was the very best anatomical teacher of his day, and probably the best *anatomist* that ever taught in that school, without excepting even Dr. Hunter himself. However, the reason I take the liberty of mentioning the subject is this—that his son, Dr. James Wilson, of Dover Street, will, I know, be highly displeased at the omission of his father's name. And I take the liberty of suggesting *(confidentially)* that you should write to him a few lines apologising for the mistake. Except you do this, it will be *very difficult to persuade him that the omission was purely accidental.* I beg you to excuse this liberty, and believe me to be,

"Yours very truly,

"To G. Gulliver, Esq. "B. C. Brodie."

Accordingly I wrote to Dr. Wilson, who seemed satisfied with my apology, but intimated that Brodie might have been the cause of the offence. On the contrary, as the foregoing letter shows, he had drawn my attention to it, and wished me to pacify Dr. Wilson. And when I wrote to Brodie that I had happily succeeded, he sent me a letter as follows:—

"Brome, Betchworth, Surrey,

"My dear Sir, "September 7, 1846.

"Dr. Wilson, I believe, is a kind person in his own family, and justly obtained great credit at Oxford. But he is unfortunate in having

a disposition to suspect that his father and himself have been intentionally slighted by others; and this disposition is continually bringing him into difficulties. I was connected as a teacher of anatomy with his father for seven years, he being at that time proprietor of the School. The connexion was dissolved nine or ten years before Mr. Wilson died, in consequence of circumstances compelling him to dispose of his property in it. It was not worth my while to purchase the property, as I had other and surer means of advancement; besides which the sum he required *of me* was beyond my means. In consequence my place was taken by Sir Charles Bell. The expression in Dr. Wilson's letter of others rising in his father's service must refer chiefly (though probably not exclusively) to myself; but it is quite absurd as applied to me.

"Of Mr. Wilson's great merits as an anatomist, there can be no doubt, as I mentioned in my former letter; but the only monument which he left behind him was his *admirable collection* of anatomical preparations made by his own hands; which he sold to Sir Charles Bell, and which Sir Charles sold, with his own additions, to the College of Edinburgh, where I believe it goes by the name of Sir Charles Bell's Museum.

"Always, my dear Sir,
"Yours very truly,
"G. Gulliver, Esq. "B. C. BRODIE."

The letter is interesting in relation to the writer and to the history of the Windmill Street School, by far the most eminent school of surgical anatomy that the world had then seen, and the more remarkable as being quite independent of any hospital, though the lecturers might or might not have been connected with hospitals. That school is further mentioned in the Hunterian Oration of 1863; and the following letter, dated a few weeks before the former, contains more information concerning that celebrated private school:—

"14, Saville Row,
"My dear Sir, "March 21, 1846.

"The Windmill Street School of Anatomy was founded by Dr. William Hunter. Mr. Sheldon and Mr. Hewson both taught anatomy there with Dr. Hunter for some time, and then established themselves as independent teachers—the former in Great Queen Street, Lincoln's Inn Fields, and the latter (*I believe*) in one of the streets leading out of the Strand.

"Mr. Cruikshank came to Dr. Hunter first as librarian, and then taught with him. At Dr. Hunter's death he was succeeded by his nephew, Dr. Baillie, and the school was then carried on under the names of Dr. Baillie and Mr. Cruikshank. In 1798 or 1799 (I forget which) Dr. Baillie quitted the school, and the teachers were then Mr. Cruikshank and Mr. Wilson. At Mr. Cruikshank's death, which soon happened, he was succeeded by his son-in-law, Mr. Thomas. In 1805 Mr. Thomas left off teaching anatomy, and I then joined Mr. Wilson as teacher in the Dissecting Room and Demonstrator. In 1808 I gave a considerable part of the lectures, and from that time was joint lecturer with Mr. Wilson until the spring of 1812. I was succeeded by Sir Charles Bell, who at first lectured conjointly with Mr. Wilson and afterwards lectured by himself.

"I do not believe that either Mr. Hunter or Sir Everard Home ever taught anatomy in Windmill Street, except by superintending the dissections; but Mr. Hunter established a dissecting-room afterwards, which was superintended by Sir Everard Home.

"I am, my dear Sir,
"Yours very truly,
"G. Gulliver, Esq. "B. C. BRODIE."

As we have seen, Dr. Wilson was satisfied with my private explanation at the time. Some years afterwards, in my fourth College Lecture, I took the opportunity of speaking in just terms of his father, and sent a published copy of the lecture to Sir Benjamin Brodie, who replied as follows:—

"37, Portland Place, W.,
"My dear Sir, "March 18, 1862.

"The statement in your lecture will be a sufficient contradiction of the rather uncharitable suspicions entertained by Dr. Wilson. If my recollection be accurate, I had written to you suggesting the omission which you had accidentally made, and doing all justice to the memory of my instructor, Mr. Wilson, before you heard from Dr. Wilson himself.

"I am, my dear Sir,
"Yours very truly,
"G. Gulliver, Esq. "B. C. Brodie."

In the foregoing correspondence there is much to the honor of Mr. Wilson and his son. The great merits of the former are duly recognised on the highest authority, and his son's assertion of them independently when he thought, and thought justly, that I ought to have given the proper place to his father's name in my notice of the Windmill Street School, was a commendable act of filial respect. There was a postscript to Brodie's letter of Sept. 7, 1846, which is here suppressed, as it seemed to me that he would have disliked its publication; I have, therefore, preserved it in my private copy of Hewson's Works.

Some further letters passed between us, chiefly on the subjects of my College Lectures, which were then being reported in the 'Medical Times and Gazette.' Brodie still maintained his early views as to the influence of the brain and nerves on the generation of animal heat. The following letter, showing how, until a few months before his death, this eminent man retained his wonted interest in science, also includes interesting notes, hitherto unpublished, of a remarkable case of Leukaemia. I had suggested to him, in conversation, that the case might be clear to Dr. Hughes Bennett, and that I should be glad of written notes of it to send to him.

The long fast and high temperature of the huge snake, during her incubation, was more particularly described in the 'Proceedings of the Zoological Society,' at or near the date of the following letter. The facts may be commended to the consideration of the physicians and other persons who have made so much ado of late concerning the fastings, and continued warmth, of human beings for thirty or forty days.

"37, Portland Place, W.,
"My dear Sir, "April 25, 1862.

"I am sorry to hear of your illness. As to the question of animal heat, the case of the incubation of the great Python at the Zoological Gardens is of much interest. She had taken no food for thirty-five weeks, and yet her temperature was elevated to twenty degrees above the natural standard.

"The case which I mentioned to you of enlargement of the spleen was very curious. The patient was admitted into the hospital on account of an injury to the knee. It being thought necessary to bleed him, the blood was observed to be very thin and watery. Afterwards it was discovered that the spleen was enormously enlarged. On examination of the body after death, the heart and great blood-vessels were found to contain not the usual coagulum of blood, or very little of it, but a quantity of yellow semi-fluid substance, very similar to a thick custard in appearance. The case occurred nearly fifty years ago, and I made accurate notes of it; but in those

days animal chemistry had made little progress, and no chemical examination was made of the contents of the blood-vessels. I have no objection to your mentioning the case to any person on my authority.

"I have somewhere read of such another, but I cannot recollect where. I do not think there is one recorded in Dr. Bennett's book, but I may be mistaken.

"Yours very truly,

"G. Gulliver, Esq. "B. C. BRODIE."

Brodie in the spring of 1862, when I last dined with him, was very infirm in body, his eye-sight dim, and an arm or shoulder—I think the right—lame. Still his mind retained its wonted acuteness. Like most old people he was fond of talking about old times, and very instructive it was to hear him, especially after dinner when the ladies had retired and we were left alone together.

In such a conversation, which it was my privilege to enjoy, we were led to talk of Sir Everard Home. Brodie said he had in early life been anatomical assistant to Home, and knew him thoroughly; adding that so much bitter if not mistaken feeling had been caused by the destruction of the Hunterian manuscripts that it was not pleasant to say anything about that too notorious transaction. Nor would it be recorded now if all the parties implicated or concerned in the charge had not gone to their final account. Brodie spoke warmly about it. declaring his opinion that too much pother had been made on insufficient evidence. "But is there not the damning fact that Home burnt heaps of those manuscripts?" To this, my question, Brodie answered—"None at all, that he made a bonfire of them; but it was alleged, and probably with truth, that Hunter had used them up and directed them to be destroyed, and would himself have treated them as Home did; and there was no indisputable proof that Home had pirated their contents, while there was ample evidence that he was well able to originate and execute independent researches, aided as they were by a liberal expenditure of time and money." Brodie seemed pleased when I told him that Dr. Grant and Mr. Wormald had often told me that there had probably been some mistake about Home's guilt. When the subject was much pressed on Wormald for his Hunterian Oration of 1857, he rejected it; and showed me a letter which he had received, full of fulsome praise of the merits of the writer and guilt of Home, and proposing the matter for the coming Oration. The letter was taken no notice of by Wormald. Can it be the same writer who has inspired Sir James Paget for the last Oration?

Home's offence, however, has lately been unmercifully revived with great bitterness, In the Notes to Sir James Paget's 'Hunterian Oration,' published by Longmans, 8vo, London, 1877, after the death of Home's son and representative, Captain Sir Everard Home, R.N., is the following passage concerning of Sir Everard:—"As he grew old he became, I believe, the subject of one of those forms of senile degeneration in morality against which all men growing old need to guard. He stole from the Hunterian manuscripts, and then burnt them, after publishing many of Hunter's observations as his own." It is not probably meant that Home published the observations as Hunter's own. After reading this passage I lost no time in writing to its author the following letter:—

Canterbury, May 21, 1877.

My dear Sir James,

I beg to thank you very much for the copy, enriched by your autograph, which you have sent me of your admirable Hunterian Oration. I have read it and hope to read it again with pleasure and profit. Meanwhile, seeing your excellent treatment of the subject and the interest I take in it, I hope you will pardon me for venturing to submit to you a few brief remarks thereupon.

Hewson, Falconar, Cruikshank, and Wilson, though excluded from your instructive notices, were among John Hunter's eminent contemporaries. Hewson lodged with Hunter, and was among the best of his physiological comrades; Cruikshank, whose services to anatomy are well known, was one of the last surgical comforters of Dr. Johnson; Falconar was a generous youth, full of zeal and knowledge, well acquainted with Bloomfield and Pott, and still more noteworthy as affording an example signally opposed to the vile conduct imputed to Sir Everard Home; Wilson, but a young man when Hunter died, was the most excellent teacher of and lecturer on anatomy of his day, as I have been repeatedly assured by the late Sir Benjamin Brodie and Sir Astley Cooper.

The old and sad charge against Sir Everard Home makes one shudder for the honour of our profession, and feel that an incendiary and a thief deserves the gibbet. But, before execution of the sentence, does it not behove the judges to make sure of the guilt of even the basest criminal, and to hear what may be said in his behalf?

My lamented friend, the late Dr. Davy, often declared to me his belief that Home did not destroy the manuscripts to hide his thefts therefrom; and that his known and certainly original contributions to anatomy afford good evidence that his powers were above the need of such odious plagiarism. The late Dr. Grant expressed a like opinion to me on more than one occasion. I have heard too the late Dr. Babington and others pooh-pooh the worst part of the charge. And one Hunterian Orator rejected it, though much pressed on him, from his Oration. Moreover, at a tête-à-tête dinner with the late Sir Benjamin Brodie, in the spring of 1862, he emphatically declared to me his belief that his old master, Sir Everard Home, however rash and unscrupulous in some respects, was quite incapable of the theft or thefts imputed to him, and that there must have been some miserable mistake in this part of the accusation.

Allow me again to apologise for thus troubling you. But being and having long been confined by senility and painful illness, I could not call to pay my respects and offer explanations to you by word of mouth.

I am, my dear Sir James,

Yours very truly,

GEORGE GULLIVER.

To Sir James Paget, Bart.

Clift, in his idolatry of Hunter and dislike of Home, no doubt readily and honestly believed in the guilty verdict, which was of such a sensational character as would of course much magnify the subseqnent labours and merits of the Conservators of the Museum. At all events one of them has been widely puffed, and in many respects justly, only the anonymous reviews and newspaper paragraphs to this end, and the endless paeans in the 'Celebrities' of such publications, and so many forms of puffery of one person and detraction of others, have caused doubts which would otherwise never have arisen. How Wormald was vainly solicited for help in such defamation of the dead and praise of one of the living, has already been mentioned in the present Chapter. But not a word of public notice has appeared of obstructions to the due completion of the Catalogue of the Hunterian specimens, of which an example is given above in Chapter XIV. I had intended to treat plainly and in kindness on this subject in my Hunterian Oration, but was withheld by the advice of a good friend. As to Home, if the charge be really true, his will be

"A name to all succeeding ages curst."

But it seems hard to conceive that such an atrocious accusation could have been made and believed, as it was and still is, against a man of fair fame. No doubt the evidence must have appeared very strong against him.

For the credit of anatomists, it would be quite a relief should it ever appear that he was not quite so bad as he seems. But at this distanec of time and nearness and persistency of indignation, it is difficult to learn what character he bore for honesty. We know, however, that no mention was made in the obituary notice of Clift, published in the 'Proceedings of the Royal Society,' Nov. 30, 1849, of Home's crime; that he was educated at Westminster School, and elected thence to a Scholarship at Trinity College, Cambridge; and that before the wretched business of the manuscripts, he held a high position in science, in his profession, in society, and in the estimation of his Sovereign. Thomas Phillips painted a portrait of Home, which is still preserved and displayed at the Royal Society. And now, after he and his representatives have sunk into their graves, it seems rather hard on old men to be warned by his example against "senile degeneration in morality," and its consequent incendiarism and plagiarism. Goethe saw no need of any such warning; for in 1816 he wrote to his friend, Arthur Schopenhaur, "I am too old to appropriate the ideas of others."

CHAPTER XVI.

It is a fair question whether, since the time of Schleiden and Schwann, German histology has not been overrated in Britain, according to the prevailing fashion here of an undue preference for exotic productions? A glance at the periodical announcements in the English journals of new papers, provokes a smile at the preponderance of the Germans; and this if not always, yet commonly, to the exclusion of far more important French and English contributions. Examples of this preference are so general as to excite no surprise. We have hardly yet realized the truth of Wordsworth's lines—

> Sometimes by the thought restrained
> That things far off are toiled for, while the good
> Not sought, because too near, are seldom gained.

It would be endless to cite even a tittle of the cases in which we choose to go to Germany for points in physiology which had long before been part

and parcel of British science. But a smack of foreign relish seems indispensable to the English taste. When, for one example, the important doctrine of the migration of the pale corpuscles of the blood was announced here, from a series of experimental observations, by Dr. William Addison and Dr. Augustus Waller, it was allowed to lie dead-born, until revived by Professor Cohnheim in Germany many years afterwards. Then indeed we had a profusion of admiration at "the great German discovery." And even now, in Carpenter's large book on Human Physiology, 8vo., London, 1869, to the foreigners alone is the discovery assigned, while even the names of the true discoverers, our countrymen, are ignored in connexion with the subject. With the prevalence of such errors, chiefly through the faults of our own compilers and critics, the future historian of Physiology in England will have hard work to get at the truth. Nor will he be at all assisted, but rather misled, by such authors as Kolliker, Stricker and his many writers, and Virchow. The French are more just to British and Irish merits. While the Germans had seized Graves's discovery of exophthalmic goître, and named it after their countryman, 'Basedow's Disease,' the eminent physician of the Hôtel Dieu, Trosseaux, corrected that imposition; and moreover generously recognised Addison's title to the discovery of the peculiar disease of the renal capsules, and emphatically assigned to it the name of the English physician. Schmidt and other Germans did not seem to be sufficiently aware of Dr. Buchanan's observations on the coagulation of the blood, published at Glasgow so long since as 1845.

The deplorable state of our critical literature was signally exemplified on the appearance of the English version of 'Stricker's Human and Comparative Histology'; and too many other like instances are well known. The book was ushered in by an amazing and imposing array of German names, under the auspices of the New Sydenham Society. Though the work contained some good chapters and valuable memoirs, gross errors swarmed in many parts, and a large proportion of it was behind the state of the science in Britain; and the whole was merely ludicrous when regarded, according to its title, as a treatise on comparative as well as human histology. But in spite of all this there was one universal and unqualified song of praise, both in our periodical literature and in some of our Universities. Only a single but ineffectual voice was raised for the truth, and that was in a review published in the 'Edinburgh Medical Journal,' April, 1873, of the first volume of Stricker's book. All the volumes of the 'Human and Comparative Histology' have already become alms for oblivion in the wallet that Time carries for such things at his back. Even the older Manual of Physiology by Johannes Müller, and the works by Leydig and Sharpey, contained either better or more perfect comparative histology than Stricker's three big volumes.

To show a few of the numerous points which still require complete treatment, I here give an extract from my last Will and Testament, by which, in the event of a possible, but not very probable, contingency, provision is made for a scholarship in the University of Oxford. To this end, researches in animal and vegetable histology are directed, such as Bone, Muscle, Nerve, Blood, Chyle, Lymph, Vibratile Cilia, vegetable Latex, Raphides and other Plant-Crystals, particularly vegetable and animal cells, Epidermis and its appendages. On each occasion the investigations to be confined to one subject and carried, as far as possible, systematically throughout the animal or vegetable series; thus, for instance, describe the distribution of Vibratile Cilia—their presence and absence—and their significance, from one end to the other of the animal kingdom.

While dissenting from the conclusion which points to man as merely an advanced brute, it seems to me that the researches in England of such physiologists as Darwin and Beale are of more weight and originality than all the works together of the Germans in the same time and departments;

and the same may be said of the physiological investigations of Claude Bernard and Brown Séquard. Schleiden and Schwann are of an earlier date, and have never in England been rivalled in their researches on the cell-doctrine. We ought not, however, to ignore the far earlier, but of course much less perfect, observations of Hewson, who died in 1771, and whose demonstration of the cell-doctrine was excellent so far as regards the red blood-corpuscles. But his important discoveries were neglected or discredited for more than three quarters of a century afterwards. Even John Hunter asked the idle question whether such observations could explain anything in the animal economy? Though always heartily joining in the general and just admiration of Schwann's researches, very soon after their publication in England, I proved that their leading doctrine, as to the absolute necessity of a cell for the developement of a fibre, is not strictly correct; nay, that even a membrane may be formed without the immediate agency of a cell, as shown in fig. 13 of my College Lectures; and, if I mistake not, Mr. Savory has observed that a permanent structure may be produced in the same manner. Hewson, though much despoiled by Continental physiologists, was too eminently original and upright to stoop to those plagiarisms which have so much disgraced some eminent foreigners.

The toleration and even complaisant patronage, by public bodies, of the deliberate conduct in this respect was shockingly exemplified by the admission of Professor Virchow to the Honorary Fellowship of the Royal Society of Edinburgh, quickly after the very just and temporate remonstrance by the Rev. Joseph Taylor Goodsir. This was entitled 'Grounds of Objection to the Admission of Professor Virchow to the Honorary Fellowship of the Royal Society of Edinburgh,' 4to., 18 pages, Edin, Dec. 24, 1868. This too when Virchow's conveyances of the labors of John Goodsir, and of several other British physiologists, were notorious; though, with the single and honorable exception of the 'British Medical Journal,' January 12, 1861, the plagiarisms in Virchow's 'Cell-pathology' were generally if not universally encouraged by our British Journals. A just but tardy estimate of the unhappy relations between Virchow, John Goodsir, and others was given in the 'Edinburgh Medical Journal, July 1873. The treatment by the German of my Observations on the Softening of Fibrin is noticed in the beginning of Chapter IV. But if Britons have suffered in this manner, it must be admitted that some of them have made reprisals. Certain foreigners have been meanly depreciated and pillaged in England, and not always in civil language. Von Meyer, Retzius, Purkinje and others know this too well. In England, however, such offences were regarded as odious wherever understood, and were in great part committed by an eminent anatomist who has unhappily tarnished his great fame by such proceedings.

If foreigners have so much invaded the rights of scientific Britons, it seems strange that Germans, the chief offenders in this way, should be installed in all sorts of lucrative places in England. Yet so it is in our biological and many other departments. The chief officer of the Zoological province of the British Museum is a German. He has immense patronage there, directly or indirectly, and exercises it well and truly to the advantage of science and the museum. He enlists or recommends others at ample salaries to situations. Is there a lucrative biological business to be done in England, Germans are alive and one or other of them expects to be employed, and perhaps to get a house into the bargain. The Librarian of the British Museum, Mr. J. Winter Jones, having retired on a little pension of £1,000 a year—to the envy of heros who, like Wolfe and many others, have shed their blood in the public service— the German Zoologist of our museum has obtained, besides his own large salary, the librarian's house and all its peculiar advantages. It is a more convenient and magnificent residence than the palace of some of his native Princes. And our Royal Society, of course following suit, awards the Royal Medal to the same German for his Catalogue of the Fishes,

and other such things, under his charge in the Museum. In short, the time, paper, printing and publication were all at the expense of the British taxpayer. From this picture turn to that of such eminent and independant men as Yarrell and Couch, both true Britons, whose magnificent works on Ichthyology are an honour to our country, but have never been recognised, much less assisted or rewarded, either by our Government or the Royal Society. These two naturalists executed their great works without either a word or a farthing of encouragement except from the public. These remarks are by no means intended as personal to any one of the Germans. Many of them are excellent naturalists, and no person doubts the high merits of Günther. It is against the museum or other patronage under which such lucrative situations are given to foreigners, in preference to our countrymen, that this protest is directed.

And at present we learn, from Professor Wyville Thomson's Address at the Dublin Meeting of the British Association, that Professor Ernst Haeckel, besides other work connected with the Challenger Expedition, is to have the preparation of more than a hundred plates of the Radiolaria alone. This is but a single example of the many pretty pickings given by our Government or its agents to foreigners, and of the means of puffing their names and fame. A German too was on the scientific staff of the Challenger; and another, S. Kurz, is or was Curator of the Royal Gardens at Calcutta, and had his book issued under the auspices of the government printing office. At Aldershot there actually flourished not long since a German who was in English pay to make the post-mortem examination of our soldiers, as if we had not a sufficiency of competent English Medical Officers for such work. But the like examples need not be multiplied, as they are too numerous and flagrant to be unknown.

They are the more unjust because numbers of our able and accomplished countrymen are in vain yearning for such employments. The fault lies much in the jealousy of our own scientific men, especially by the physiological section of the Royal Society, of home rivalry; and in the disposition to traffic in mutual services and adulation, like Byron and Goethe, each proclaiming the other the greatest poet since the revival of letters. The English biologists and the most eminent Germans puff one another, and payment has to be made here, often at a grevious expense to the public taxes and the fair treatment of our own students of science. We have already mentioned a few examples; and some more are really amusing. Thus we have Professor Huxley naming, and Professor Haeckel triumphantly accepting, the 'Bathybius Haeckeli'; nay Bessels or some other German soon after announcing the discovery of a 'Proto-bathybius,' and that he had observed it in lively motion. So we had a chorus of paeans, loudly echoed by Strauss and his disciples, about the grand discovery in the ocean-bed of the missing link between the organic and inorganic kingdoms of nature. But the original Bathybius has already turned out to be a ridiculous myth consigned now and evermore to the abyss of error. It seems strange that no member of our legislature has ever stirred in the matter of such appointments of Germans in Britain. Would our countrymen have any chance of similarly gainful employments in Germany? At an election, not long ago, at the Royal Society, a comparatively obscure German was chosen to the exclusion of better candidates, both in science and social position, of our own country. But as if to expose this conduct, an elaborate paper by that same German, with most expensive plates, was published in the Philosophical Transactions, and soon afterwards turned out to be, like the wonderful Bathybius, a tissue of nonsense. This paper with its fine plates, pretending to demonstrate the fungoid origin or nature of small-pox, gave a sad blow to the scientific character of its author and to the credit of the physiological committee which had patronised him so unwisely.

If we must select men from abroad for our lucrative scientific places,

why not choose Americans or Frenchmen or Dutchmen? Nobody doubts their great merits; though the contributions of the Americans of late to anatomical science and micrography have hardly been sufficiently appreciated in Europe. The intelligence and liberality of the government of the United States in sending naturalists with every expedition in which this science can be promoted has set an admirable example to us, and has already enlarged the bounds of botany, zoology, palaeontology, and physical geography. This to be sure has been done with a modesty and economy widely and wisely differing from an ostentatious and prodigal pleasure yachting under the pretence of science. Some of the most important Arctic voyages were performed by Nordenskiöld at less cost than a Lord Mayor's feast. Even now we have no book on their subjects equal to Burnett's translation of Von Siebold's 'Comparative Anatomy of Vertebratas,' published many years ago in the United States, and the English translation of Van der Höven's Zoology. Nor are works of the former kind and merits judiciously translated and commentated in England. The translations here, as examplified in such things as Strickers' Histology, mentioned in the former part of this Chapter, and of Kölliker's and Virchow's on the same science, are devoid of such notes and elucidations as are most needful, especially as regards the previous and similar observations of our own countrymen. Such notes would or should confute or confirm the points of enquiry, concerning which foreigners so often unjustly and perhaps innocently assume originality. As remarked in my first College Lecture, "It is only just, for the mere love of God, and consequently of all truth and goodness, that we should avoid that scientific atheism—so to speak—that would contemplate creation without regard to the Creator."

But the minds of the rising generation are diverted too much from orginal research. The multiplication of professorships, lectures and subjects for examinations, are enough to addle the brains of conscientious pupils, and estrange them from studies better suited to their tastes and capacities; always excepting such a low order of minds as may be more fitted to receive teaching and cramming than cultivation and education. The increase of subjects and lectures is more for the profit of teachers and professors than for the benefit of learners. The numerous specialities are rather fitted to perplex than to educate the best students. Military Surgery, for one among a host of examples; why not as well a naval surgery, a mining surgery, or railway surgery? To the superfluous Army Medical School and vexatious examinations at Netley, will perhaps be added a naval school at Chatham, a mining one at Newcastle and Durham, a railway one at Crewe. They would add greatly to the increase and emoluments of professors, and to the perplexities of students; and to this end such schools might be still further extended—nay, developed to suit a popular doctrine.

Reverting to the sumptuous expedition of the Challenger abroad, one can hardly avoid deploring the poverty of some parts of useful natural history at home. Investigations of great importance to rural economy are but poorly encouraged here, though the Bethnal Green Museum is or was a step in the right direction. To this day we still want accurate information concerning the numberless pests that infest animals and plants. The formidable arachnid parasites, e.g., that sometimes prove so destructive to our sheep and birds, are but imperfectly known; and little cared for, except occasionally when their ravages are most injurious. In chapter xvii. an instance of this kind is mentioned, on which none of the experts at the British Museum could throw any light. To these gentlemen even the name of the noxious parasite was unknown, though with the thing our farmers had too often been familiar. So also of noxious fungi, and of many injurious animal and vegetable parasites, our knowledge is still sadly deficient. Nor have we yet a handy volume of short and plain diagnoses of our fishes and notes of their seasons. And as to creatures of no obvious use, but interest-

ing withal, you cannot search in a ditch or pool without finding many species, such as the Planarians, not described in our books of natural history. All such objects, from their number and frequency, should command due attention at home before going in search of novelties abroad. But to be sure, humbly looking after animal and vegetable parasites and dabbling in ditches and ponds, and exploring sheep-skins, &c., however needful and useful such occupation might be, would by no means prove such a lofty and expensive pursuit as luxurious yachting round the world.

But with this disregard of the wants of home science, many special and important physiological problems with which a foreign expedition was alone competent to deal, and to which the scientific world had a right to expect that attention would have been given, were quite ignored, and this amid the most favourable circumstances for investigation. Thus, for example, the temperature and the blood corpuscles of the animals were not examined, although many living specimens of outlandish birds, fishes and invertebrates passed through the hands of the scientific staff of the Challenger. It is simply pitiable to read of the animals thrown away without the least thought of such interesting questions. John Davy's discovery of certain warm-blooded fishes of the Scomber family, and the neglect of the splendid opportunities of pursuing the inquiry, have already been mentioned in Chapter IX. The Myxionoid fishes were similarly wasted without the least attention to their red blood-corpuscles, in the face of the well known fact (depicted in the Proc. Zool. Soc., December 6, 1870, p. 845) of their aberrent form in the allied family of the Lampreys. Yet plenty of time was found by the Challenger experts for speculations about such fancies as whether cock birds and butterflies might not, by artificial painting, be made more attractive to their hens; how the development of the art of fortification was from rubbish heaps near dwellings; or how a hairy pimple or mole on the skin may be a remnant of the original beastly and hirsute state of man. Such and much more of the like Darwinism may be seen in Mr. Moseley's book, which is the more deplorable as it is the work of a very zealous and accomplished zoologist.

CHAPTER XVII.

WORK AT CANTERBURY, page 93—PLANT-CRYSTALS, 93—MEALINESS OF CHENOPODIUM AND ROUGHNESS OF BRYONIA, 93—TABLES OF BLOOD-DISKS, 93—STRUCTURE AND ECONOMY OF LAMPREYS; THEIR SPERMATOZOA AND BRAIN-WORMS, 93-94—FIN-RAYS IN THE LAMPREYS AND HIND DORSAL OF SALMONIDAE, 93-94—INTERNAL RESPIRATION IN A WORM, 94—THE CANTERBURY BELL HARRY BUG, 94—PLAGUE OF ARACHNID TICKS, 94—MAJOR MUNN'S EXPERIMENTS ON THE STINGS OF QUEEN BEES, 94—QUEEN BEE JELLY, 94—MUSCULAR COAT OF POISON BAG OF BEES AND WASPS, 95—TUSSILAGO FRAGRANS FOR EARLY BEE-PROVENDER, 95—PLEA FOR THE PRESERVATION OF RARE PLANTS AND ANIMALS, 95—AND FOR THE PROPER MANAGEMENT OF PROVINCIAL MUSEUMS, 95-97—THEIR IMPORTANCE IN EDUCATION, 96—SCHOLASTIC VALUE OF NATURAL HISTORY, 97-98—DEVELOPEMENT AND EVOLUTION, 98—MAN'S POSITION IN NATURE, 99—MATERIALISM, TRUTHS AND HALF-TRUTHS, 98-99—DARWINISM AND HUXLEYISM, 99—QUESTION OF THE ORIGIN OF LIFE, 99.

During my residence at Canterbury, my physiological pursuits have been continued, though often interrupted by long and painful illness. Here, trying to promote the cause of natural science in the provinces, I took much interest in the East Kent Natural History Society, of which I have for many years been Vice-President and Honorary Secretary. At Canterbury too I gave a little assistance to Dr. Power in some parts of the seventh edition of Carpenter's great work on Human Physiology, and contributed several memoirs on subjects of animal and vegetable anatomy to the scientific journals, besides a chapter and two plates on Raphides and other Plant-Crystals to the fifth edition of Dr. Lionel Beale's 'How to Work with the Microscope.' The Proceedings of our Kent Society will show how much attention we paid to minute phytotomy. As regards plant-crystals, Mr. Hammond gave us valuable aid. Two questions, being of a popular kind, may be mentioned here—to wit, the cause of the mealy surface of the goose-foot order, and of the asperities on the leaves of Bryonia. My investigations proved the former appearance to be owing to the inflated and glistening ends of the hairs, and the roughness of the bryony leaves to calcareous granulas. At Canterbury also were prepared my collected observations 'On the Sizes and Shapes of the Red Blood-Corpuscles of Vertebrates,' with drawings of them to a scale, and most extensive Tables of Measurements, as published in the 'Proceedings of the Zoological Society of London,' June 15, 1875.

In the same 'Proceedings,' 1870 and 1875, were published my papers, with woodcuts, on some points in the anatomy and economy of the Lampreys, especially as regards their genital outlets, spermatozoa, fin-rays; and, as discovered by my son, Platyhelminths on the brain within the skull. These worms we named Neuronaia Lampetrae, as noted in the 'Quarterly Journal of Microscopical Science,' January and October, 1872, reporting the Proceedings of the East Kent Natural History Society. At this Society, as described in the same Journal of Microscopical Science, I described the

fin-rays in the posterior dorsal of certain Salmonidae; in which, as well as in the Lampreys, the presence of rays or ribs was then denied by our best ichthyologists. The fact concerning the remarkable difference between the spermatozoa of two British specimens of Petromyzon was equally novel, as described, with engravings, in the Proceedings of the Zoological Society, April 20, 1875.

The abstracts of the Reports of the East Kent Natural History Society, published in the above-named Microscopical Journal, gave notices of observations by Col. Horsley, Major Munn, Mr. Dowker, Mr. Fullagar, Mr. Sibert Sanders, Mr. Hammond, &c., including myself. The bracketed dates below refer to parts of that Journal containing notices of some of my contributions to the Kent Society. Among these occur *Intestinal Respiration* by vibratile cilia in a riuged worm, supposed to be Saenuris variegata (January, 1872). An Arachnid new to the British fauna, had long been known, and called the Bell Harry Bug, in Canterbury Cathedral. My son took specimens of this creature to Oxford, and there Professor Westwood determined the species to be *Argas reflexus* of Latreille; but this not till after our repeated failures at the entomological departments of the British Museum and elsewhere (April and October, 1873). So too with another and bigger Arachnid, which we thought was *Ixodes Dugesii;* it abounded and was a dreadful pest in the vicinity of Canterbury, swarmed on sheep and other animals, including pheasants, and proved fatal to the hosts unless they were promptly relieved. This could only effectually be done by hand-picking, as washes and other applications were quite ineffectual. The necessary process was tedious and expensive, and though successful for the time, by no means so thereafter—the vermin would increase again. And no wonder when we discovered that when they were kept in a pill-box, they would, like the Argas, in a short time lay numerous eggs, which soon hatched there into lively young, and that the hatching of the eggs was equally quick and sure when they were kept separate from the parents. So it is plain that picking them off and throwing them pregnant on the ground, as the shepherds did, was sowing the parasites broadcast to breed anew. The Ixodes, adult and distended, was about as big as a small horse-bean; the Argas not more than a third as large (July and October, 1872).

At our Canterbury Society we had many curious and novel experiments on bees. The late Major Augustus Munn, of Dover, was our Coryphaeus in this department. He often brought to our meetings queen bees, and pitted them together in pairs, when they would fight like gamecocks till one or other was killed; and this either in the day-time or by lamp-light. His point was that the poison of the sting proved deadly by being applied to the stigmata or breathing apertures of one of the combatants, and that the queen bee could not sting like working bees. And truly so it was in many trials; for when a queen was put on the human flesh and irritated, she would protrude her sting and eject the poison, but could not, or at least did not, penetrate the skin. This fact was repeatedly shown on the bare and delicate hands of ladies, who, though frightened at first, felt no sort of harm, and were afterwards fully converted to Major Munn's opinion on this point. On microscopic examination, we found the queen's sting larger, more curved, and somewhat blunter than that of the working bee, which was very straight and sharp (April and October, 1873).

The Major, an intelligent and enthusiastic bee-master, gave us ample supplies of bees and their products for investigation. Of queen-bee jelly, or bee-bread as it is sometimes called, there being nothing satisfactory in any book,—physiological, chemical, or apiarian,—I undertook the examination, and plainly proved that it is an albuminoid substance, affording abundance of Mulder's protein, in a molecular base, therefore rather an animal secretion than a mere collection from plants; and so far from being a "pollen-paste," as the excellent George Newport described it (Trans.

Lin. Soc., Nov. 18, 1845) in the Hymenoptera, the composition is mainly as above described, with the addition of a few perfect and some disintegrated pollen-grains. Hence this bee-jelly is just such a nutrient matter as is best fitted for the growth and developement of the insect-larva, like milk for young mammals, and the ingluvial secretion of certain birds for their nestlings (July, 1872, and October, 1873).

In the muscular coat of the poison-bags of bees and wasps, a curious difference appeared. That coat in the queen of the wasp was found to be composed of the transversely-striped kind of muscle; but not so in the queen of the honey-bee. The observations on this point were originally made by my son, who further observed the same difference between the workers of the two insects (October, 1873). And in relation to bee-keeping, we described the excellence of *Petasites fragrans* as early bee-provender; and that this plant, at least at Canterbury, contrary to the descriptions in botanical books, is truly hermaphrodite (April, 1873).

In the city also I gave addresses, demonstrations, and lectures on various subjects to the forementioned Society. In some of them were remonstrances against the pernicious and prevailing practice of extirpating rare plants and animals, commonly by the cupidity of mercenary dealers, but too often encouraged by absurd premiums offered by natural history societies. Papers by me on this subject were published in the Reports of our Kent Society, in 'Nature,' May 27, 1873, and in other journals about that time. So our Society at least set a good example in this respect; we never offered premiums for "the best collections," either of animals or plants. And we have since acted on the principle that, if the questionable course be pursued of trying to induce young people to study natural history by rewards of money, the object could be better effected by means which would spare rare species. Thus, instead of favouring the destruction of them by premiums, like those of our forefathers for wolves' heads, the diligence and attainments of our rising pupils might be more profitably exercised and trained by indueing them to study the nature and economy of common and even noxious plants and animals. For examples, the specific characters of the Roses, Brambles, Willows, and Sedges would be excellent exercises; so would the intimate structure of many orders or genera of plants, including their glands, hairs, pollen, tissue-cells, and the distribution and significance of raphides and other plant crystals. Then there is the vast and important order of the Grasses. And as to the animals, the structure. metamorphoses, and general economy of such common insects as the Cranefly, Cockchafer, and Cockroach would be equally eligible. And these all belong to such an extensive class of subjects, botanical and zoological, as might be easily expanded or contracted to suit every occasion.

Concerning the objects and management of Provincial Museums I insisted at several of our meetings, especially on October 1871, and January 1877. Both the Addresses on this subject were published in our Annual Report, and the first also in 'Land and Water,' in 'Nature,' and in the 'Athenaeum.' My observations were extended, in 'Land and Water,' May 11, 1872, to 'Natural History Museums on the Sea Coast.' But the petty and miserable jobbing in such matters by municipal bodies and their connexions, whenever local museums are aided by the parish rates, is too often pernicious and invincible, and the disturbing influence of some officious and priggish quidnunc or other is not unlikely to make matters worse. Either from ignorance or cupidity there are generally busybodies enough to divert any available funds from their legitimate purpose. So the Museum, while affording petty pickings, too frequently becomes a sort of advertising bazaar. This is the rule, to which happily honorable exceptions are afforded by several provincial museums.

But the mischief of those trumpery curiosity shops, commonly called museums, is still so rampant that a brief notice may here be given of some

of the points at issue, so far as regards natural history. In them no amendment can be expected before knowledge is so far spread as to render the continuance of such exhibitions no longer possible, At present they impose only on the multitude. The cry is that the museums are starved for want of sufficient money, and Mr. Mundella some time ago gave notice to the House of Commons of a motion to enable the municipalities to levy further sums. No doubt the corporations would like such an extention of the power of collection and expenditure; but it might not and probably would not be for the benefit of science. The truth is that the funds already levied under the pretence of museums are amply sufficient if judiciously expended. The whole question, which is of much importance as regards the intellectual culture of the rising generation, seems to have been woefully neglected, like other branches of the best education, amid the hubbub of school boards and other organizations for more instruction or teaching. The sums now squandered on the aforesaid incoherent medleys and motly gatherings under the pretence of science, would suffice for the formation and maintenance of collections that would educate the mind, and be admirably adapted, if judiciously selected, arranged and described, to promote a knowledge of and love for natural science, But, so far from promoting this worthy end, the managers of many provincial museums appear to be more bent on little jobs, and the bewilderment of the eyes and brains of the groundlings, than on the rational amusement and education of the people; and so the voluntary aid of scientific men is repulsed. Thus it is deplorable to see how the study of natural history is rather retarded than advanced and the prevailing ignorance confirmed and maintained.

On the contrary, provincial museums should be suited to the best mental culture. They ought to have a few good preparations, whether foreign or native, to display the general principles of nature, and systematic sets of many specimens to illustrate the natural history of the district. The needless and grievous expense of room and money, caused by the acquisition and preservation of a gallimaufry of unsuitable objects, should be especially avoided. Their name is legion and their presence a crying evil. But they form only a part of the mismanagement which repels the gifts of desirable specimens; as well as the services of such scientific men who, being resident in the district, would be willing to assist gratuitously in a good work, but by no means to join in one not very creditable to its supporters and still less to science. To a museum judiciously formed and conducted, naturalists would from time to time, and by a mere love of the subject, freely make most useful contributions, seeing that they would be properly appreciated. Then we might get rid of a jumble of useless native and foreign curiosities, all very well in their proper place, but out of place and a nuisance in the provincial museum; and possessing there no more relation to science than the puffs and screams of railway whistles to music. From a rational collection teachers could and would impart to their pupils such a taste and knowledge as would be profitable to them and to society, and thus be enabled to realize and herald to the popular mind the noble results of natural science. In such a museum too the farmer and gardener would find much useful assistance, by means of specimens illustrative of the insects which are either beneficial or hurtful to plants and animals, and which we cannot hope to encourage or check but through the means afforded by an accurate knowledge of their economy. So too of noxious and useful Fungi. But it is not by mere or immediate utility that such studies and measures are to be judged. By their monitory aid every rural walk would present a profusion of objects for pleasure and profit; lessons would be learned of the countless plants and animals, their affinities and contrasts, and their position in the great system of nature. Then, too, tutors and their pupils would come to look with an intelligent interest to the specimens which are

more or less characteristic of the district or country in which they are found, and thus get a glimpse of, if not an introduction to, botanical and zoological topography or geography. All this and much more a good local museum would promote.

On the Continent such desirable results have been long since realized. Here is one example in which the illustrious and now venerable Milne Edwards was an actor:—"In 1853 we reached Rochelle before night, and on the following morning hastened to pay our respects to the elder M. d'Orbigny, one of the veterans of marine zoology. Like most men who have worked hard themselves, M. d'Orbigny gives a hearty welcome to all those who follow in his own steps. On the strength of our title as naturalists we were received as old friends, and soon made the acquaintance of several men devoted to the sciences of natural history, and in their company visited the Museum, in which they had made a most interesting collection of the different productions belonging to the three kingdoms of nature which are found in the department of Lower Charente. Having examined this local fauna in the museum, we at once understood the nature of the district about to be investigated." These interesting remarks are in the second volume of the 'Rambles of a Naturalist,' by the eminent zoologist A. de Quatrefages. They plainly show what sort of specimens we have a right to expect in a local museum; and how it should form an agreeable link in the kin of all true naturalists, as is did at the brave little town of Rochelle. The eminent philosopher, Sir David Brewster, had a still higher view of the subject. When presiding at the Peace Congress in London, 1851, he declared that museums might, if properly conducted, so educate our youth as to promote the blessings of peace and hinder the curses of war.

In other Addresses to the East Kent Society, while describing the advantages of the study of the natural sciences, and how Nature is a perpetual Revelation at once sublime and inexhaustible, the occasion was taken by me to remark how a good cause might be injured by the over-zealous attempts of some of its advocates. Accordingly, concerning the scholastic value of natural history, though asserting its special excellence as one of the easiest and best means for the education of the senses, so as to train the minds of young persons to observation and reflection on the works of the Creator, and thereby delightfully and beneficially exerting the reasoning faculty, we would wish to avoid the too common error of trying to prove too much. At present, the knowledge of organic or living nature is, and long will be, in a very fluctuating and progressive state; and however this may increase its interest, the value is so diminished as to sink in mental discipline far below the worth of the exact sciences and fixed languages. Contrast with these last two the everlasting vicissitudes and perplexities in biology, its vexatious changes of nomenclature and aggravating multiplication and jumbling of synonyms; and then say whether the minds of young persons are to be trained by such misty questions as these, and the earliest zoological fossil, Eozoon, and the most extended and original material of vitality, Bathybius, and the like bewilderments. Why, this very Bathybius, after having been vaunted as the great discovery of the missing link between dead and living matter—as nothing less than a sort of vast protoplasm or independent Moneron, all alive and "ready for development in any direction"—has already been consigned to the limbo of error, and will be followed thither by many other wild biological speculations. But the mistakes and difficulties of the natural sciences are no valid arguments against their importance, and of their value as before mentioned, though fairly to be considered when they are urgently proposed to take the place of the time-honoured subjects and means of education in schools.

In short, the education of youth should be fitted to prepare them for the pursuits of knowledge in their manhood. To this end they should be

subjected to such intellectual training as will bring out their reasoning faculties, promote logical habits of thought, and exercise and improve their powers of attention and memory, of mental concentration or abstraction. When these points of true education are borne in mind, the cuckoo-cry of the busy agitators on the relative value in the business of the world of Greek and Latin and natural history will appear out of the question of scholastic education.

Objections having become current at Canterbury concerning the danger of the infidelity supposed to be favoured by naturalists, I attempted to ease the minds of the objectors by a Lecture, delivered June 9, 1868. The audience was so large that we had to hire a room for the occasion, and the substance of the lecture was published in the Annual Report of the Society at Canterbury; and in the Report of the next year appeared my Lecture on 'Cell-biography in relation to systematic Botany.' As the question of 'Man's Position in Nature' is important, and disturbing to many minds, and I believe has not before or since been treated in the same manner, a short summary of the lecture will now be given:—

It has of late become a common objection to anatomical pursuits, that they tend to views calculated at once to outrage our common faith and our common sense. This objection is of so little weight that it can never prevail permanently, principally because its corporeal and derivative doctrines and facts are not founded on truth; that is to say, as our law wisely expreses it, "the whole truth and nothing but the truth." It is an old and sage proverb that "a lie stands on one leg and the truth on two." And every casuist knows full well that more error is promulgated in the shape of mere literal half truths than by whole and point blank lies; as may be seen well illustrated in Fielding's 'Tom Jones,' in Coleridge's 'Friend,' and more recently in some verses by Tennyson especially on this subject.

The anatomical doctrines about development or evolution are by no means new. They are indeed old, but have been raked up afresh and spread about quite recently, as if they were all novel and true discoveries. In the very same shape, or at least intention, as we now witness them, they were rife and vulgar more than half a century since, when they were imported into Britain, chiefly from the Continental Cyclopædists or their disciples, among whom were Lamarck, Denis Diderot, and the notorious Baron Von Holbach. Erasmas Darwin in England early engaged in the like doctrines, which he eloquently treated in verse and prose, extending the views of development so absurdly as to imagine that the anthers of flowers might be transformed into insects; and in like manner he plunged into an abyss of extravagant conjectures which foreshadowed the speculations of his sucessors in our time. And so no wonder that at length the devolopment of the human race from an ancestry of monkeys became a creed. But only in the fertile fancies of a sect of physiologists. These strive to reduce our judgment of man's nature simply to the question of his brute structure. Thus it was and still is attempted to confine the evidence to a half truth—the 'one leg' of the proverb. It seems amazing that a set of conscientious philosophers should thus descend to the depths of a mass of stale, flat, and unprofitable facts and doctrines, half truths, as if they were the total evidence and fresh and new discoveries of the whole subject. And still more remarkable is it that the philosphers in thus attempting to degrade mankind, should not perceive they have sunk into the old error of mistaking a part for the whole. The ancient Mexicans believed with Hesiod, as we learn from Alexander Humbolt's Researches, that the men who survived a frightful tempest were transformed into apes. And Captain Franklin, in his 'Journey to the Polar Sea,' describes Northern Indians who so firmly believe that they sprang from a dog or dogs as to substitute their women for the laborious work of those quadrupeds.

Even granting, merely for argument, the literal accuracy of the detached facts as to the material organization, we still plainly perceive that there is something more, and that no correct judgement can be hoped for without a due consideration of the entire evidence. This, though hitherto withheld, we must have in the light of the whole conscientious verity; and can any rational being suppose that this excludes the moral or psychological nature of man? Surely this is as much a part of his nature as his mere material structure or organisation. The one as truly belongs to his nature as the other. Bearing this in mind, and considering 'Man's Place in Nature' as shown by the comprehensive evidence, it will be difficult to avoid the conclusion that he is elevated above the highest ape far more than the gorilla or chimpanzee or any monkey is above the lowest beast; and in short that our species is separated by such an impassable gulf from all brutes that any attempt to bridge it over by anatomical facts and speculations is as vain as trying to bridge an abyss with no foundation on the further side. The very essence and specialty of humanity is Reason and its expression by Speech, by which alone can we apprehend eternal truths and enjoy the trust in and worship of God. By ignoring Him the materialists are neglecting the highest characteristic of His highest creature.

And so we may go on our way, rejoicing that a right pursuit of the natural sciences will surely lead us to look through nature up to Nature's God, and as certainly never afford any proof that it now is or ever was any part of His design to develop an ape or any other beast into a man. And finally as to 'Man's Place in Nature,' it is exactly where his Maker placed him, Lord of Creation here, far above all other animals, and enjoying alone the high privilege and elevation of "those thoughts that wander through eternity."

This lecture had the effect of quieting the minds of some intelligent and good people. They had been much and sorely vexed at having their ancestry traced to monkeys instead of to the special omniscience of the Creator; and were greatly relieved by finding that there is some reason for the most cherished conviction of the highest humanity against the doctrine which, in bitterness of heart, they were wont to call 'Darwinism' and 'Huxleyism.'

Had the physical origin of life, as treated by many modern biologists, formed a part of the subject of the lecture, it might have afforded more matter for criticism. We have already mentioned how the doctrines of evolution and development came to Britain. Here Materialism was much advanced by the eloquence of Bolingbroke, mildly reflected in the poetry of Pope. The amiable David Hume, too, was of the same set. In his 'Dialogues concerning Natural Religion,' one of the interlocutors says—'What need to go beyond chance, or blind unaided force for the origin of nature? A number of atoms, incessantly transposed through unlimited time, must sooner or later fall into the order of the existing universe.' Indeed this view is much older. The Atomism of the ancient Democritus is plainly seen through the recent cloud of the Potential Atoms of Tyndall and his disciples. They have been too prone to regard only things seen and forget the unseen; and not to perceive that a vital principle is a necessity of thought, whatever may be concluded of life as an entity; while all organic nature proclaims that life regularly reproduces itself by a power quite denied to dead matter. Nobody doubts that many natural phenomena with which we are familiar are utterly beyond our power of explanation or comprehension, yet we seldom see the materialists content to rest in the humility of ignorance accordingly. They seem to think that Nature has no right to conceal anything from them, while they persist in 'untenanting Creation of its God.' In vain for them has been and still is the cardinal philosophical maxim of Bacon,—that 'the subtility of nature far transcends

either sense or intellect'; and the advice of Locke that—before setting about certain inquiries we should examine what objects our understandings are or are not fitted to deal with, as more fully explained in the Introduction to his Essay on the Human Understanding. And surely we gain no knowledge from such speculations as those of Tyndall up the mountain, and of Frey, Haeckel, Huxley, and others down into the ocean, simply because we cannot comprehend the beginnings of life in a mote or molecule or atom of the rising sun, or in the vastly extended and mythical Bathybius of the deep sea. The truth is still concealed by the subtilty of nature from our impotent understanding. All the labours of materialism go only to afford further proof of the old truth that Finite cannot explain the Infinite.

Life remains as mysterious as ever, and, as already mentioned, a necessity of thought. Whatever may be the agency of material forces—electricity, heat, motion, chemical action and the like—granting that they are instruments of Life, they are still not the cause of Life. We have abundant evidence that in all nature there is an intelligent purpose and guidance, a foreseeing design; and it is no argument, either one way or other, that the Creator has thought proper to leave us in ignorance of the exact relation between our spiritual and animal nature, and how, why, or when an originating intelligence merges in the Divinity. Materialism is vain in the face of this important question; as indeed was foreseen by the holy Apostle, when he spoke of 'Science falsely so called . . . vain philosophy . . . the world by wisdom not knowing God' (Collos. 28, 1 Tim. 6, 20, 1 Cor. 1, 21). Vain philosophy verily! and its disciples in our day, as well as such of their forerunners as Descartes. Hartley, Hume, Hutcheson, and many others, remain equally ineffectual. And indeed they are as far as ever from a knowledge of such subjects as Life and Mind, which are only obscured by lectures like those delivered at the British Association and elsewhere. Nor have such questions been made at all plainer by the recent and persistent harping on them by periodical and other writers in a manner as useless and tiresome as organ-grinding. And not less wearisome is the common blinking of the main question by treating all psychical phenomena as beyond the argument, as if they were nothing more than figures of speech or poetic ideality. But our true reason is forced to receive them as real. Light will not help the blind; which reminds me of some verses by Mackworth Praed, and a couplet of the 'Rejected Addresses,'—

> 'Thinking is but an idle waste of thought,
> And nought is everything, and everything is nought.'

Too often so indeed! for no exertion of the mere intellect has ever enabled the materialists to explain the origin of life on our planet or of the planet itself. As inscrutable as ever remain Thought, Consciousness, Conscience, Memory, and its mysterious associations, Dreams and Somnambulism and the phantasms of Insanity, and many more familiar facts. Are we to conclude, with what Carlyle called 'philosophedom,' that they are nothing more than results of material organization, the basis of which is protoplasm, or simply 'nought,' or merely effects of machinery, like the ticking of a clock, and all as independent of the Divinity? Such 'foolishness of the wise' may well dispose sober minds to the wisdom of confessing ignorance.

The poets, without any pretentions to the profound knowledge professed by the naturalists, have shown more wisdom. Cowper sung how 'Nature is but an effect whose cause is God.' Thomas Campbell is still more emphatic when he says, in his Life of Petrarch, 'Strange madness of mankind, who, with little more power of comprehending the stupendous power of their Creator than if they were animalcules wriggling in a drop of water, dogmatise as if they had the intellects of archangels.' James Howell,

about the middle of the seventeenth century, has some verses in his Familiar Letters, of which the following occur to my mind :—

'If it be a mysterious thing
Why steel should to the loadstone cling;
If Nature's so obscure, then how
Can we the God of Nature know?'

Even Dryden and Lee, in their Œdipus, have expressed some reverence on this subject :—

'But how can finite measure infinite?
Reason! alas, it does not know itself!
Yet man, vain man, would with his short-lined plummet
Fathom the vast abyss of heavenly justice.'

The very children are hymning, after the poet, the glories of the firmament,—

'For ever singing as they shine,
The Hand that made them is Divine?'

A weak woman—poor Charlotte Smith, taught in the stern school of affliction—had a chant which might be, like that of the babes, instructive to the philosphers :—

'Alas! how little can be known,
Her sacred veil when nature draws;
Let baffled science humbly own,
Her mysteries understood alone
By Him who gives her laws.'

And Felicia Hemans has truly sung of the vanities of those philosophers

'Who search the laws that nature's springs control;
There tracing all—save Him who guides the whole.'

In fine, the universe is not a huge steam-engine; nor, as Jean Paul remarks, can heaven become a gas, God a force, the next world a grave.

CHAPTER XVIII.

As to pastimes the foregoing chapters might be sufficient, but there are miscellaneous memories not therein related. With recreations time went on agreeably. The common objection to early dinners—"What on earth will you do with the evenings?" always seemed to me a vacant and idle question. I never when in health found time heavy or a day too long. If nothing else there were old dramas and other poetry and books at home—'the old friends who are never seen with new faces; who are the same in wealth and in poverty, in glory and in obscurity'—and mediaevel architecture and monuments, paintings and engravings, not too far off. Local records of genius and legendary places had their attractions, so that idle time—then not idly spent—was much passed by me in visits to Cathedrals, Churches, and other ecclesiastical buildings, never forgetting the grave-yards and other memorials. In chapter viii. some serious epitaphs are cited. Here is a funny one brought by social Dr. Maunsell from near Oswestry:—

Here lies Martha Gwynne,
Who was so pure within
That she broke the shell of sin
And hatched herself into a cherubim!

Though it is not likely that Martha Gwynne's friends ever read Carew's Poems, her hic jacet seems like a travesty of the lines in his Epitaph on Lady Mary Wentworth—

—'Her soul grew so fast within
It broke the outward shell of sinne,
And so was hatch'd a cherubim'!

Such conceits remind me of the worthy host of a village inn called the "Lion," who is recorded as having departed this mortal life "in hopes of Zion," and then concludes in a more mundane strain:—

'The son keeps on the business still,
Resigned unto the Heavenly will.'

The next, a humorous quatrain, may be better known, as it was written by Pope on John Moore, a famous worm-doctor in the City, and the author of 'the Columbarium':—

O learned friend of Abchurch Lane,
Who sett'st our entrails free,
Vain is thy art, thy powder vain,
Since worms shall eat e'en thee.

Here is another, to a parish clerk, 'said to be written by himself,' as Pope informs us:—

O Reader, if that thou canst read,
Look down upon this Stone;
Do all we can, Death is a Man,
That never spareth none.

The following solemn one, like a voice from another world, is from Melrose Abbey, wherein Robert Bruce's heart is enshrined, and near which I enjoyed many a day's angling:—

Earth walked to earth glittering in gold!
Earth went to earth sooner than t'would;
Earth built on earth temples and towers;
Earth said to earth, 'All shall be ours!'

Kind-hearted Charles Lamb might have demurred, as in his sportive gaiety about what, I think, he called 'gravestone moralities' and 'dead men's inpertinences.' But in his serious mood he no doubt would have felt the genuine pathos of such epitaphs as that by Mason on Thomas Fountayne, of which I remember only that we are pathetically exhorted on the doom of man, and that the last two lines compare the fate of the reader with that of the deceased:—

'Be yours awhile to pace this vale of care,
Be his to soar with seraphs to the skies!

The grave of genial Elia, when I made a pilgrimage to it many years ago in Edmonton churchyard, had an upright tombstone with an appropriate inscription composed by his friend Cary, the translator of Dante.

As to London its local associations were an inexhaustible source of amusement. At Temple Bar there was Child's baking house, where at the Apollo club, Ben Jonson and his associates revelled; just opposite to it Field Lane, where the celebrated Kit Cat Club first met, and from the Trumpet Tavern of which lane many of Steele's Tatlers were dated; in the Churchyard of St. Paul's, Covent Garden, lies Butler, the author of Hudibras, with his feet, as old Aubrey tells us, close to the north wall of the church; Charles Cotton in an undistinguished grave in the churchyard of St. James's, Piccadilly; the haunts of Johnson and Boswell in Fleet Street; Goldsmith's grave on the north side of the Temple Church; Gavan Douglas and George Wither buried in the Savoy Chapel, Wither between the east door and south end of the church. Michael Drayton lived "at the bay-window house next the east end of St. Dunstan's Church, Fleet Street," and Izaak Walton hard by at his little shop near the south west corner of Chancery Lane. This shop I well remember, much in its original state, with the entrance door divided into two halves transversely. Numberless other reminiscences come to mind in almost every part of the great metropolis, pregnant with memories of Spenser, Milton, De Foe, and a multitude more of illustrious men named in chapter x. In London, too, in St. Margaret Patten church, Fenchurch Street, rests the 'eminent surgeon, John Birch, Esq.,' who died February 3, 1815, and has inscribed on his tomb—"The highest object of his art was to cure—not maim—to preserve, not destroy." So we see that there was long since an idea if not the practice

of 'conservative surgery,' though it or the term was claimed as a discovery in the lectures delivered by Sir William Ferguson, in 1867, at the College of Surgeons.

Windsor also, where I was oftened quartered with my regiment, had the pleasant associations of Castle, Forest, and Great Park, with delightful memories of Surrey and Geraldine, Shakspeare and Jack Falstaff, Milton, Cowley, Denham, Waller, Pope, Arbuthnot, Gay, Swift, Bolingbroke, Burke, Gray, Thomson, Collins, Wordsworth—

> "Glorious names, and venerable long!
> If there be force in virtue or in song."

You cannot take an hour's ride in any direction thereabouts without recalling the works or haunts of one or other of these distinguished men:

> "Here his first lays majestic Denham sung;
> There the last numbers flowed from Cowley's tongue."

And the scenery of the Thames, Forest and Park, is in itself truly beautiful and grand. In the course of a few hours you may stroll leisurely through the Great Park, up the noble Long Walk shaded by its old and magnificent elms, thence through Bishopgate to Englefield Green and Cooper's Hill; descending to the River and Runnymead and Magna Charta Island, returning by the little village of Old Windsor. In the churchyard of Old Windsor is the grave of the unfortunate Mary Robinson, the admired Perdita on the stage of her day, and the sad victim of her own weakness and the passion of the Prince Regent. Some plaintive verses in relation thereto are among the many that she published under the assumed name of Laura Maria.

These interesting places, which I enjoyed by favour of proximity, are well worth a pilgrimage from a distance. They have been immortalised by the magic of genius and the assertion of our liberties. The Thames will recall the noble apostrophe of Denham to its stream, Collins's Ode to Thomson's grave, and the 'Remembrance of Collins' by the kindred mind of Wordsworth; and Pope's numbers have consecrated the chequered lights and shades and waving groves of the sylvan landscape—

> "By god-like poets unmovable made."

Shelley at one time much affected Englefield Green and Marlow. He was well known to old Mr. Furnival, of Egham, a medical man who attended the poet professionally, and told me that he was always very communicative, and seemed to be an amiable visionary of no great use in this world, and with little hopes of the next. As Mr. Furnival, besides the usual practice of his profession and his long experience, kept an asylum for the insane, he must have had opportunities of acquiring a knowledge of mental peculiarities, though he does not seem to have understood the poetical temperament.

Extending the walk a little from Englefield Green, much of the beautiful scenery and imagery of Milton's Minor Poems may be realised at or near Colnbrook or Horton. There he passed his years while he enjoyed his eye-sight, and he has left abundant evidence how well he had used it, and how truly his impressions remained after he had lost it. His descriptions spring up to mind when you see the 'towers and battlements' of Windsor Castle; and, in the placid Coln, 'the glassy, cool, trusluent wave' amid 'the pleasant fields and farms,' and perchance the refreshing shower succeeded by the extended beams of 'the evening sun with farewell sweet.' In Horton Church we saw his mother's grave. Milton and Colnbrook are mentioned again further on in this Chapter, page 112.

On the Buckinghamshire side of the Thames, a long walk of not more,

there and back, than a day may lead you to Stoke-Poges, the scene of Gray's grave and Elegy, thence to his favorite Burnham Beeches, to Taplow, Dropmore with its glorious Pinetum, and memory of the first practice, in 1823, of the bedding-out system in flower-gardening, and next to

> ——————— 'Clieveden's proud alcove,
> The bower of wanton Shrewsbury and love,'—

whence is even a more delightful view of the river, 'gliding at its own sweet will,' than the more famous prospect of it from the legendary Cooper's Hill. By a further stretch from Clieveden, Beaconsfield may be reached, where is Waller's tomb in the churchyard, and not above a mile off the place where Burke passed some of his happiest and a few sorrowful years.

Few places are better worth a visit than this quaint little town, as I found in occasional rides and walks thither from Windsor, through Eton, Slough, passing Salt Hill and the legendary Mount, thence by Gray's Country Churchyard at Stoke-Poges, and so to Beaconsfield, some eight or ten miles altogether. This place has escaped the attention of excursionists and antiquaries; perhaps because it has not been invaded by railways, and its most interesting ancient Rectory-house is not noticed in J. H. Parker's Domestic Architecture. In the old coaching days the town was familiar to travellers, and then all alive with such traffic, but has now sunk into a quietude which agrees with the character of its single broad street and double rows of trees and picturesque gables, including the front of the Saracen's Head Inn. The pretty town has, moreover, cheerful and sad memories connected with our history. Here, while recalling the sunny poetry of Waller, a recollection of his shady political character springs up with an irresistible melancholy. But in spite of his dastardly conduct, and mean sneer at our greatest epic and its author (already mentioned in chapter ix.), Waller died full of years and wealth and family prosperity at his mansion of Hall Place. Burke regularly attended divine service in the church at Beaconsfield; and at his neighbouring seat, called Gregories, was wont to entertain his friends, including Johnson and Reynolds, and, though by no means rich, kept here and encouraged the penniless poet Crabbe. But Burke, after the death of his son, became so desolate that he never recovered the shock, and so passed the remaining three years of his life in sorrow. When he sunk into the grave, a modest mural tablet of brass was put in the nave of the church to mark his sepulchre. In the churchyard Waller has a grand mausoleum, with its mounting obelisk and obtrusive vases. There are few more touching scenes of the kind than such contrasts afford; and the difference between gay and busy Windsor and its quiet neighbour Beaconsfield will be remarked by the visitor to those two places.

Returning to the Berkshire side of the Thames, there is, on the edge of the old Forest at Binfield, the house in which Pope lived with his aged father and mother, and the venerable sire hoarded £20,000 in a chest, which he thought more suitable to the conscience of a papist than the security of a protestant government. When my wife and I visited Pope's house, we found it empty, a goodly brick building, with capacious rooms; the situation gloomy and remote, but the scenery sufficiently beautiful for such poems as the 'Windsor Forest,' 'Eloise and Abeland,' and the 'Memory of an unfortunate lady.' About half an hour's walk from Binfield is the Rose Inn at Wokingham, where Pope, with such companions as Gay, Arbuthnot, Bolingbroke, and the jocular Dean had many a jovial meeting, enlivened by the then great wits of Ireland, Scotland, and England. Then no doubt, among other matters, may have been discussed Swift's remark of "what an odd pretty sort of thing a Newgate pastoral might make," since so widely known as the 'Beggar's Opera.' At the social glow at the Rose too was chanted 'Molly Mog, the Maid of the Inn,' a ballad still extant in Gay's

works. And what Pope sang at Twickenham might have been no less true of Wokingham—

There St. John mingled with the friendly bowl
The feast of reason and the flow of soul'

It would be difficult to find nowadays in a country Inn such a company as then met at the Rose, or indeed elsewhere since the time of Johnson and Goldsmith, Burke and Reynolds.

Nor can we ever expect to see such a constellation of wits as appeared at the advent of the Beggar's Opera, as recorded in Spence's Anecdotes. Congreve, who had seen it in manuscript, declared that "it would either take greatly, or be damned confoundly." At the representation, Gay, Swift and Pope were on the tenterhooks of suspense, till relieved by the exclamation of the Duke of Argyle that it must succeed. This was before the first act was over. How complete and lasting the triumph was and has long been is as well known as the anecdotes connected with it. Poor Gay and his friends must have had a jolly night of it after all their anxiety. Their friend Atterbury might have been among them; but he was a prisoner in the Tower, and his destruction loudly demanded by Lord Cadogan, on whom Atterbury wrote some verses in which is a notable specimen of what Churchill calls, in his Prophesy of Famine, 'apt alliteration's artful aid,'—

'A bold, bad, blustering, bloody booby,'

And this brings to mind some instances of the same kind that I have not seen collected among the many current examples of alliterations. Thus in Pope's Homer—

He lies a lifeless load along the land:

A young lady, in 1800, on Mr. Lee's plantation of lilacs,

Let lovely lilacs line Lee's lonely lane;

in this every syllable begins with the same letter—*l*; Sylvester, writing of thunder, in his translation of Du Bartas,—

——————————It groans and grumbles,
It rolls and roars, and round, round, round it rumbles.

The memory of Gay's work is still fresh in many a sweet bit of poetry. Even the recluse and melancholy Cowper wrote to the Rev. William Unwin, Aug. 4, 1783, 'What can be prettier than Gay's ballad, or rather Swift's, Arbuthnot's, Pope's, and Gay's, in the What d'ye call it—"Twas when the seas were roaring!" I have been well informed that they all contributed, and that the most celebrated association of clever fellows his country ever saw did not think it beneath them to unite their strength and abilities in the composition of a song.'

The pleasant footpath which had during centuries been open and free from the Fryingpan Walk across the Home Park to the pretty village of Datchet was closed soon after the advent of Prince Albert, and that without the least opposition by the public, who had thenceforth to plod their weary way by a tedious round to and from that village. Close to the stopped walk was, and perhaps still is, 'Herne's Oak,' an ancient and decayed tree, celebrated in the "Merry Wives"; lately this venerable relic had been marked by an appropriate extract from the play, on a brass plate affixed to the trunk of the tree, by my friend Jesse, already mentioned in Chapter III; but this plate was removed by the same royal authority, much to the indignation of Mr. Jesse and the amusement of some other persons. Perhaps he might have felt some consolation had he known that such authority had not always been so successful in closing a footpath. We learn from the 'Gentleman's Magazine,' 1752, and from Horace Walpole's letter to Mann on July 27th of the same year, that the Princess Emily, when she was Ranger of

Richmond Park, made more than one ineffectual attempt to shut up certain footways therein. In this case the upright conduct of the judge, Sir Michael Foster characterised by the Lord Chief Justice De Gray, as "the Magna Charta of Liberty of persons as well fortunes," was highly commended by Thurlow, afterwards Lord Chancellor, and by the poet in this couplet—

'Each judge was true and steady to his trust,
As Mansfield wise, and as old Foster just.

It is not pleasant to see how an ecclesiastical authority may still be violated in the stopping of footpaths. Centuries ago the Second book of Homilies gave "Godly and wholeseme doctrine necessary for these times,"—and indeed for all times.

Truly beautiful are the scenes in the Great Park and Forest. Queen Ann's Ride and the Long Walk, and the herds of Fallow Deer and Red Deer are well known; and Virginia Water is quite a resort now, but was perhaps more private formerly. Pope sings either of this place or Hampton—

Here thou, great Anna! whom three realms obey,
Dost sometimes council take—and sometimes tea.

The Rhododendron Rides to and from the Cumberland Column and Virginia Water are private; but I often enjoyed their lovliness, being favoured with a key of the gates. Cranbourne Lodge, however, in the great Park, was a more favourite place with me, not only from its sylvan grandeur, but from the Heronry there. One Beach—that loveliest of forest trees—and the Conqueror's Oak, and the glorious Locust trees (Robinia pseudo-acacia) were truly magnificent. The stately beach was in perfect vigour, so were the Robinias; but the huge oak—'high top bald with dry antiquity'—was little more than the shell of its immense trunk, though still bearing a few fruitful branches. This decrepit and venerable tree may be quite as old as the Conquest. The Yardley oak, immortal in the poetry of Cowper, and mentioned in his letter to Lady Hesketh, Sept. 13, 1788, he believed was a thousand years old. It, too, when I saw it forty years ago, was hollow-trunked, with a few flourishing branches, life still lingering close to a magnificent death. So also was the Cowthorpe Oak, as I witnessed upwards of half a century since, when it was said to be quite 1500 years old; it stands some three or four miles from Wetherby in the West Riding of Yorkshire, Dryden tells us of the oak—

Three centuries he grows, and three he stays
Supreme in strength, and in three more decays.

No wonder the herons should have chosen such a secluded and sylvan scene as Cranbourne for their breeding-place. There, with graceful gyrations, and a still and smooth motion, they skim or sail over their nests and the lofty trees, scarcely at all flapping their wings, but keeping them so steadily and quietly expanded as to puzzle one how the rapid onward or circular drift of the birds is produced. The direction of their flight is more easily explicable. While in most birds the steering power belongs to the tail, it is too short for this purpose in the herons. Accordingly, you see their long legs stretched out behind, alternately closing together and separating widely, so as to act like a rudder in guiding the course of their flight. Soaring elegantly above their aerie, weighing their spread wings as if to 'dally with the wind and scorn the sun,' they present a signal contrast to their direct flight, desultory and ungainly, from and to their breeding and feeding haunts. Many an hour have I spent in watching the graceful evolutions and poise of these birds, and their settling on their nests to disgorge food into the gaping mouths of their young. The whole scene was well fitted to make one, like Drummond of Hawthornden,—

Quite forget earth's turmoils, spites and wrongs,
And lift a reverend eye and thought to heaven.

It was curious to see the herons, so shy at other times and places, display during the season of procreation the utmost confidence. They have then no fear or suspicion, but pursue their important business quite undisturbed by the presence of man or beast. During my visits, either on foot or horseback, the birds pursued their work as unconcerned as if unconscious of any intruder. Yet they have sharp and long sight, to say nothing of other senses. At Shern Hall, Walthamstow, some goldfish were kept in a trough near to the front of the house, in a populous neighbourhood. They disappeared mysteriously from time to time, but we could never discover how, though no pains were spared; till at last, one morning after a night-fall of snow, we detected the culprits by their footprints. The herons, from their lofty flight, must have seen the little fish in the daylight, and come to them in the night or early dawn; unseen by us, though we were often watching at eventide and peep o' day. Horace Walpole, in his letter to Richard Bentley, Dec. 19, 1753, relates similar losses of goldfish by the like marauders at Strawberry Hill, and how long he, too, and his people had been puzzled to discover the theives.

In the spring the herons come early to their nests. The first I saw there, in several visits during the year 1842, were two fine old birds, evidently reconnoitring, on February 24th; on March the 25th they were numerous, and egg-laying had commenced in the old nests. On April 20th I saw the old birds feeding their hungry young therein, and a few days afterwards found two or three of them about half grown and dead on the ground. In the stomachs of these were fish bones, scales of the common snake, half digested frogs, a field mouse, and a roach about eight inches long, besides a mass of hair of the common water-vole. Many casts or pellets found beneath the trees had a similar composition. At the advent of Autumn only a few of the herons appeared, and none were seen during the day in November. Then the spectacle, formerly so cheerful and animated, and so beautiful in the foliage of the young year, had assumed the more sombre but not less lovely tints of its decline and fall, recalling the lines of the amiable quaker-poet and critic, Scott, of Amwell:—

> Oft Fancy's ear,
> Deep in the gloom of evening woods, has heard
> The last sad sigh of Autumn, when his throne
> To winter he resigned.

Sometimes in April, May and June, I saw dead Shrews (sorex tetragonurus) on the grass near the heronry, but could never find any traces of them in the stomachs of these birds nor in their cast pellets. Perhaps the offensive secretion in the latural glands of the shrews was their protection. It is said that cats will not eat them and that owls will. My friend Jesse, a better zoologists than physiologist, was sometimes puzzled about the numbers of these dead shrews which he found on the Slopes of the Home Park, and which he thought had been wantonly killed, and rejected as food, by cats, but confessed that he had never been able to see them in the act. I repeatedly examined numbers of the dead shrews which he brought to me. They proved to be mostly males, evidently killed by fighting together during the season of sexual excitement, as more particularly explained in my paper in the 'Proceedings of the Zoological Society of London,' June 26, 1842. The Darwinians no doubt would regard the fact as another proof of the survival of the fittest; and we may be sure that it was a case of the mortality of the weakest. In the gall-bladders of two females were several nematoid worms, and in the intestines tapeworms: and the food in the stomach of the shrews consisted wholly of the remains of insects, myriapods, wireworms and earthworms. These tiny quadrupeds are the very fairies of our mammalian fauna, and are not only quite harmless but really useful to gardening and agriculture; yet every idle man or boy remorse-

lessly destroys all these pretty and valuable animals as far as he can; and the same may be said of our bats, which are all insectivorous.

The little Norman or semi-Norman churches in the vicinity of Windsor are interesting. The small and very beautiful cathedral-like and later church, uniformly of the middle decorated period, is rather further away at Shottesbrook. Of the former, all nearer Windsor, good examples may be seen at Upton, Datchet, Clewer, and Laleham. At this last place Arnold, during his early married life, passed many of his happiest days in tuition. His house, when my wife and I visited it, was empty. The rooms were of ample dimensions. and the firegrates of more than adequate size; that in the kitchen large enough to roast a whole sheep and consume much fuel. An old crone remarked to us—"Aye, them was cheerful times, a power of coal burnt and logs too, and plenty of victuals going and no stint; it was a sad day for a many of us when they left, and now the place knows 'em no more and seems haunted like." The house is large; it stands near the Thames, where he and his pupils were wont to bathe, as we were told by the forementioned dame.

The little churches already specified are examples of the best monuments of the piety of our ancestors in the twelfth aud thirteenth centuries. And if near Windsor there are not so many fine sepulchral monuments as appeared a little later near that generation, these are not wanting in the Round Church of the Temple and in larger ecclesiastical buildings, and of a style too that has seldom if ever been equalled since. There is a reverent godliness in them that is deeply impressive, often, too, with the dog as an emblem of fidelity at their feet. Indeed such effigies of knights and crusaders give a solemn elevation to the mind, leading far more to thoughts of mortality and immortality than the beauty and excellence of ancient classical sculpture, with all its mythology and allegory so ineffectually repeated in our modern monuments. I think it was Coleridge who chanted of the monumental figures of the Knights,—

'Their swords are rust, their bones are dust,
Their souls are with the saints, we trust.'

And the kindred spirit of his friend Wordsworth has left a tribute to the warrior carved in stone at Bolton Priory:—

'A warrior with his shields of pride
Cleaving humbly to his side,
And hands in resignation prest,
Palm to palm on his tranquil breast.'

Such mediæval works suggest a more lively devotional feeling than that excited by the truly beautiful sculptures of children, executed in our own day as mentioned in Chapter VIII., which are so amiably affecting to maternal and domestic sensibilities.

The inquiries during my rambles among churches and elsewhere were often met by funny incidents. Asking at Colnbrook and Horton for the house in which Milton had lived, the only answer we could at first obtain was—"Milton! one Squire Milton did live here lately, but he hooked it and made himself scarce; a-many besides you have been kindly axing after him and would like to find him. They say he was in the stock-jobbing line." This reminds me of pilgrimage to Great Berkhampstead, the birthplace of the charming poet Cowper and of the good Bishop Ken. Being full of such associations, and having obtained the guidance of the sexton, we easily found the grave of Cowper's mother in the chancel of the church, and felt the tender memory of his beautiful verses on receiving her picture; and then we began to inquire for the house in which he was born, and for any memorials of the Bishop. But this rather puzzled our conductor; and he cut us short, saying that if we would follow him he could show us

'something worth seeing.' Accordingly, he took us over the road in the village, pointing out to us a goodly house, and telling us to look well at that. 'There now,' said he, 'is the very house in which Tawell the quaker lived with his good wife when he went to poison his bad woman at Slough, and soon afterwards to be hanged at Aylesbury. When he courted his true and lawful wife he put a £1000 note into her bosom!' That atrocious murder had lately caused much noise. At one of our visits to Winchester Cathedral, as we were going round its choir and chapels, an old gentleman of the party, directing his young daughter's attention to a bit of restored work, softly told her that it was 'good Norman.' Whereupon our guide, flourishing his official wand, exclaimed somewhat rudely, "That good Norman! that was done within twelve years since." This raised a laugh at the expense of the old gentleman, which was increased to his credit when he sharply retorted, 'Stultus es! that's good Roman, though spoken in less than twelve minutes since!' So we were made merry in the solemn temple.

The forementioned anecdote about Milton reminds me of an adventure of a friend on the road near Stratford-on-Avon. Asking an old man if he knew anything of William Shakspeare thereabouts, the reply, accompanied with a scratching of the head, was—"Shakspeare! Aye, there have been and may be now some of that name in the town, but they come and go so that nobody minds 'em much!"

A few of the foregoing anecdotes recall Charles Lamb's pleasant chapter on Imperfect Sympathies, examples of which are indeed very frequent. Thus, two genteel young ladies, with their old governess, calling to see my wife and telling us that they had lived some years at Deal, led me to remark that it was a place memorable in connexion with the translator of Epictetus, Elizabeth Carter, who boasted of having planted there the most eastern oak in Britain; and when some one added that she was the daughter of the Vicar of Deal, the only reply was, "Ah, we did not know him!" When I was in the Scottish Highlands, a tale was current concerning a timid tourist—said to be the Lord Chief Justice from the South—being carried by a gillie across a somewhat dangerous river, and asking, when in the worst part of it, whether persons so attempting the passage were not sometimes lost, was comforted as well as might be by—'Na, for we always find the *boodies* lower *doon!*' Again, the irate tourist persecuted with incessant wet, asking whether it *always* rained in that country, had to console himself with the reply, 'Na, whiles it *snaws*.' When the melancholy report was retailed to a company at Edinburgh, of Tippoo's English prisoners in India, driven liked beasts chained two and two together, one of whom was young Baird, afterwards the eminent General and always of a wilful temper, his old mother exclaimed, "God help the poor lad that's chained to our Davie!" Some of these instances may be well known; as is that of Charles Lamb's adventure with farmers in a stage-coach. They had perplexed him by sundry bucolic questions all quite cabalistic to his cockney mind; when at last, seeing the grievous drought then prevailing, he was asked what he thought of the prospects of the turnip crop, and got off admirably by replying that he supposed it would depend very much on the boiled legs of mutton. Of the same kind of cross-purposes or defective meanings is the anecdote of the beautiful young woman—I think a princess of the Buonaparte family—being asked how she could endure sitting naked as a model to artists, replied—'O, my dear, we have a good fire!'

And Mr. Keene's Drawings have given excellent illustrations to the same effect; such as the modern school inspector asking the little children, "Who signed Magna Charta?" and then receiving the tearful reply that *they* did'nt." But after all the old joke of the honest Cambridge carter is none of the worst; who, when asked by some undergraduates if his horse could *draw an inference?* boldly replied, "*Aye, or any thing in reason.* So also, to the question of Goëthe's friend, Schophenhaur, and other pessimists,

Is Life worth the living?—the answer of some wit, *That depends on the Liver*, must have been a surprising clincher; playing between anatomy and morality. The inquiry of a disciple of Moody and Sankey of a visitor, 'Are you a converted character?' was replied to if not satisfied with, 'No —I am a bricklayer;" and when a counsel, finding a witness rather too precise for his cause, sharply asked, 'Do you keep a Diary Ma'am?' he had to make the best of 'No—I keep the Magpie public-house.' When I was in London the question in the Clubs, why was not a certain Lord to have the then vacant Thistle, was solved by some modern George Selwyn—'Because he is such an Ass, that they are afraid he would eat it.' The hen-pecked husband, when the company at a tavern feast chanted 'There's no place like home,' emphatically ejaculated, 'Thank God, No!'

Some of these anecdotes are more or less illustrative of habits or manners. In the newspaper notices of Births, the words wife and Mrs., till lately, were always supplanted by 'the Lady' of So and So. Now the far more respectable term of Wife prevails, and indeed has quite put out the vulgar innovation; and that suddenly about the time of the great bazaar at the Thames Tunnel. On that occasion, Lord Malden told me he heard from the mouth of Lord Brougham, at Cashiobury, that the Lady Mayoress went with her friends for a private view, and was refused admission; when she sternly asked, 'Don't you know I'm the Lord Mayor's Lady?' which was replied to, 'Can't help that, Ma'am; if you were the Lord Mayor's *Wife* I couldn't let you in to-day.' Southey's tale of the old peasant who had for years occupied the same seat in the parish church, when at length cordially accosted by the parson, 'This must be a blessed day for you,' was replied to —'Aye, a blessed day surely, for I am hard put to it all the week; but o' Sundays I tidy myself, go to church, puts up my legs to take a little rest, and so think of nothing.' As to Ladies, perhaps it is too much to hope that the venerated matron, mistress, or dame, will ever supersede the new-fangled 'Lady Superintendent;' or that 'Gentlemen' and 'Ladies' will give way, at our railway-stations, to more reasonable and truthful terms, which, though extinct there, still survive creditably at the railways across the Channel.

At Dover, where the question of Women's Rights had been hotly agitated, with the help of much spouting elsewhere by Sussex matrons and spinsters, I was amused by the gossip in the operating-room of a barber's shop, when some views were mooted which seem to have escaped the attention of the public debaters. 'Women's Rights,' said a venerable and rather seedy customer; 'well, I suppose it is true as we are so often told that Rights include Duties; that stands to reason. The women will act as men.' This remark gave rise to much boisterous merriment, of which the cause did not seem very plain to me. When the laughter had ceased, he went on to say, "There's soldiership and sailoring, scavengering, and night-work, and police-work. Are the women going in for all that?' To which the old barber replied, 'By no manner of means; they are not going so low, but are bent on rising up to air and show themselves off, figuring away, in genteel and commanding places, such as Parliament, vestries, doctors, lawyers, and all the rest of high life, leaving the whole lot of vulgar things for the men, and looking out to get and keep husbands in due subjection thereby.' 'Aye, aye,' rejoined the former old pundit, 'and when that sort net the husband they take care to be first and uppermost, keeping their own names in front and those of their husbands behind'—of which he gave a recent and notorious example—and added, 'we used to hear a lot of twaddle about the softer sex and the gentle sex, but I call 'em He Women.' 'True,' advanced one of the sententious interlocutors, who looked as if he belonged to the building trade, 'and when they get married I called 'em semi-detached wives.' Having heard so much of late on behalf of the ladies who invade the newspapers and platforms, it was curious to find that there was

another, though less public, view of the question. And it may be well to remember that the agitation is not altogether new. Indeed it is so old that it might have decayed long ago by more staleness. In the Ecclesiazusæ and the Thesmophoriazusæ, Aristophanes is severely droll on this aspect of the sex; and in modern time the eminent Maria Edgworth, in her novel of *Leonora*, declares that—'Of late we have heard more of sentiment than of principles; more of the Rights of Woman than of her duties. ..... I have observed that the ladies, when they wish to be men, are usually those who have not sufficient strength of mind to be women.'

Reverting to excursions: During frequent visits to the neighbourhood of Colnbrook and Horton, it seemed to me matter of regret that Warton and other commentators on Milton have almost exclusively confined their illustrations to verbal criticisms, and parallel passages from ancient poets, neglecting the rich local elucidations. The scenery thereabouts, though always recalling the great poet to mind, remains unexplored in relation to his works. Yet it was in that vicinity that he got his early impressions of the aspects of external nature before he lost his eyesight. Many apt passages in proof of this view might be quoted from Comus, L'Allegro, and Penseroso, and other of his poems, as briefly noticed already in the present Chapter, page 104.

Among many pleasant jaunts one to Selbourne, in 1840, clings to memory. My companion there, the late John Fisher Murray, gave, in Blackwood's Magazine of that year, an interesting paper on our visit. The Natural History of Selborne, by Gilbert White, has allied many gentle minds. The good old naturalist's house was vacant when we were there, and so the opportunity was enjoyed of a ramble through its rooms. We strolled too about his garden and pretty lawn, where he long kept the 'old family Tortoise, Timothy,' which in its little excursions was 'much too wise to walk into a well, and had so much discretion as not to fall down a haha, but to stop and withdraw from the brink with the readiest precaution.' There are few more interesting observations in natural history than those of White on this abject reptile. He has touched it wit the hand of genius. From him, and from the lovely situation of the village, as also from the numberless commentators on the 'Natural History of Selborne,' it might be supposed that, like Wisdom, all its ways are ways of pleasantness and its paths peace. But there is another side of the popular picture, and this may be shown now. My companion, when we were at the Plestor in the village and on the Hanger above, was chanting something about—'If there is peace to be found in the world it is here.' However, on our return to the Inn, our host seemed not to be exactly of this opinion. Remarking to him that the village had been greatly extolled as a sort of earthly paradise, and that the people should enjoy much peace and happiness, he replied, 'So, so, much like other places, not much to boast of.' All we could gather from him was that nature had been much kinder to them than they were to each other. And Cobbett, in his 'Rural Rides,' August 7, 1823, writes of Selborne,—'As I was coming into the village, I observed to a farmer who was standing in his gateway, that people ought to be happy here, for that God had done every thing for them. His answer was that he did not believe that there was a more unhappy place in England; for that there were always quarrels of one sort or other going on. This made me call to mind the King's proclamation, relative to a reward for the discovering the person who had recently shot at the parson in this village. The parson's name is Cobbold, and, it really appears that a shot was fired through his window. He had lawsuits, with the people; and, I imagine it was to them that the farmer alluded.

In my rambles so many desecrations appeared of old fanes and memorials of the illustrious dead, that it was hard to avoid thinking that the frequent 'Indignation Meetings,' so ridiculous of late, would have become respect-

able if directed against such outrages. For instance, after examining the many ineffectual and worthless monuments in Salisbury Cathedral, and vainly inquiring for some memorial of Bishop Jewell, we found it, after repeated searches during three or four days, not in its proper place over his grave in the choir, but hid under the matting and seats of the Morning Chapel in the north transcept. Thither—thus simply inscribed,

JOH JEWELL
SACRVM
EPISCOPVS
OBIIT
1571—

the ignoble Cathedral authorities have removed the grave-stone of this noble prelate away from his bones, and made a common paving-slab of it without a reference even to his forlorn hic jacet, or a thought of his early and beneficent patronage of the judicious Hooker. So too in holy George Herbert's little church at Bemerton, hard by Salisbury, there is not so much as a word or mark to denote that his hallowed remains lie beneath the altar. Such deplorable examples of vulgar irreverence are unhappily too frequent. But the pages of rare Thomas Fuller and honest Izaak Walton will certainly preserve the names of Jewell and Herbert for centuries after the memory of the authors of the indignities in question, and probably as long as the sacred buildings ennobled by their vitues shall last. The 'Comprehensive Elegy' upon the good bishop, commonly ascribed to Fuller in Abel Ridivivus, has much of the quaintness of Quarles, as appears in this following stanza:—

Height of courage in Truth's duel,
Are the stones that made this Jewel.
Let him that would be truly blest
Wear this jewel in his breast.

Profanation is by no means new at Salisbury. In Horace Walpole's letter to Richard Gough, August 24, 1789, may be seen the unavailing wail of these two antiquaries, about the job by which the architect Wyatt demolished the beautiful chapels, and removed thence the monuments to the nave of the Cathedral. Even now or lately debasement is or was still at work; for when I was last there, they were actually painting the fine old stone mouldings with gaudy green and other color, like the ornaments in the cabin of a New York steamer. Unfortunately, the same architect that was allowed to tamper with our godly fanes, has left too much of his debased work elsewhere. For one example, at ever-memorable Penshurst, the spectator cannot fail to be offended at the very name of Wyatt, who has degraded some parts of the grand old mansion in a manner that the correct taste and knowledge of the present Lord DeL'Isle and Dudley would not have tolerated.

My bodily infirmities having so increased of late years as to put an end to my excursions, and to my occasional visits to my old regiment, I withdrew my name from its club, of which I was one of the original members. A few days afterwards I was agreeably surprised by the receipt of a letter from Captain Harpley, of which the following is a copy:—

St. John's Wood Barracks, N.W.
Dear Sir, May 30, 1877.

In reply to your letter of the 23rd instant, in which you request that in consequence of chronic illness, your name may be taken off the list of members of the Royal Horse Guards' Club, I am desired by the Committee to inform you that it was proposed byLord Maldon and seconded by Lord Carrington and carried, that the Committee regret the cause of your absence

from the dinner, but hope you will allow your name to remain on the List as an Honorary Member.

I beg to remain, Dear Sir,
Yours faithfully,
M. J. HARPLEY,
Honorary Secretary.

To G. Gulliver, Esq.

This reminds me of many happy days passed in the regiment, and numerous military anecdotes there and elsewhere; of which I am hardly able to give more than one or two now, and these relate to paternal care. The late Lord Maynard had an only son, since deceased, whose christian name was Charles; with whom I was long intimate and passed much time at his house, Shern Hall, Walthamstow, where his wife, Lady Frances Maynard, died in my arms. He was very fond of hunting, which was the more expensive to him as he was a heavy weight. His allowance from his father being insufficient, and the exercise really needful for the health of the son, who had no other active pursuit and was growing rather too corpulent, I was requested to see the father upon the subject, and did so by appointment. When I urged the necessity, under the circumstances, of his lordship affording sufficient means for increasing his son's stud, the good old lord listened to me with such apparent benignity that I thought the point was gained. Not so, however, for he mildly and finally replied, in a very affectionate if not derisive manner,—"You tell Charley to get up early o'mornings, and take a turn before breakfast round Hyde Park or about Epping Forest." The only effect of this advice was to cause many frantic turns, and sundry more extravangancies, about Shern Hall and its grounds. And indeed his conduct became afrerwards greviously affected by his father's hardness and worse causes, so that his youngest sister, the Hon. Julia Maynard, sympathising with my annoyances thereby, left me a small legacy by her last Will and Testament.

His father reminds me of another instance of paternal solicitude. The late Mr. Bernal, M.P. for Rochester, held some official situatien—I think Chairman of Committees of the House of Commons. His son, now Mr. Ralph Bernal Osborne, awhile the flippant jester in that senate, was an Ensign in the 71st Regiment, when I was the assistant surgeon, and the depôt was stationed at Dundee, and an order came for a draft to be sent to join the head quarters at Bermuda. Among others included in that draft were Ensign Bernal and myself. He was indignant at such an invasion of his dignity as ticketing him off for transportation, and expressed his intention of not submitting to it. Accordingly he wrote to his father, who replied with much good advice of how to preserve his health in general, and in particular to take with him to Bermuda an ample supply of Cockle's Compound Antibilious Pills. However, notwithstanding this mild banter, Ensign Bernal contrived to evade the transportation, as he called it, and was actually promoted forthwith to a lieutenantship in a fusilier regiment, and wrote a rhyming drollery on the draft, which was printed at Dundee. A copy of it, which I had long preserved, was lent to the Hon. Horace Pitt, since Lord Rivers, who never returned it to me; but perhaps it may turn up among his lordship's papers. The unfortunate wight, who had to supply Bernal's place in the draft, might be a subject of pity or ridicule, but was certainly not consoled by the verses of the pasquinade, nor much amused by its witticisms.

Afterwards Mr. Bernal's wit was still more successful, for he married Miss Osborne and assumed her name with all its advantages. Many humorous tales were current about his courtship, including the question whether it was directed to the mother or daughter. We heard much of the artillery of his eyes and hand and sweetness of tongue during the wooing;

and indeed it seemed as if he had fully realized the significance of manual pressure, as described in Kirkpatrick's 'Town Eclogue'—

> The faithful hand can unobserved impart
> The secret feelings of a tender heart;
> And oh! what bliss, when each alike is pleased,
> The hand that squeezes, and the hand that's squeezed.

THE

HUNTERIAN ORATION

DELIVERED AT

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

ON THE FOURTEENTH DAY OF FEBRUARY

1863.

SECOND EDITION.

EA SUB OCULIS POSITA NEGLIGIMUS; PROXIMORUM INCURIOSI, LONGINQUA SECTAMUR.—*Pliny.*

SOMETIMES BY THE THOUGHT RESTRAINED,
THAT THINGS FAR OFF ARE TOILED FOR, WHILE A GOOD
NOT SOUGHT, BECAUSE TOO NEAR, IS SELDOM GAINED.
—*Wordsworth.*

BY

GEORGE GULLIVER, F.R.S.,

MEMBER OF THE COUNCIL OF AND PROFESSOR OF COMPARATIVE ANATOMY AND PHYSIOLOGY TO THAT COLLEGE, HONORARY FELLOW OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND, AND LATE SURGEON IN THE ROYAL REGIMENT OF HORSE GUARDS.

CANTERBURY:
PRINTED BY CROSS AND JACKMAN,
6, HIGH STREET.
1880.

ADVERTISEMENT.

This discourse was meant only for the occasion, but is now presented in compliance with a desire expressed at an Ordinary Meeting of the College, as follows:—"It was resolved that the thanks of the Council be given to Mr. Gulliver for his Oration, and that he be requested to publish the same."

A few short explanatory notes have been added.

The above was prefixed to the first edition. A second edition being called for, the first is now reprinted without any alteration, except a very few verbal corrections.

Canterbury, January, 1880.

THE

HUNTERIAN ORATION.

Mr. President and Gentlemen,

It has often been said that the materials for these Orations are nearly exhausted, and that it is a hopeless task to seek so often for anything new or interesting on so limited a subject. But from the general tenor of this opinion, notwithstanding its support by Mr. Hunter's last biographer*, I must beg leave to dissent, and not without expressing some surprise at such a sorry representation of us, as unable or unready to find in the great book of Hunter an appropriate text for our instruction —matter "to point a moral or adorn a tale" in the rich chapters of physiological history—as if we, to whom his fame has descended as an honourable heirloom, were becoming indifferent to that precious bequest which it is our duty to cherish, and in which it is to be hoped we shall never fail to feel a just pride and to take every fitting opportunity of rejoicing. "So limited a subject"! Why, is there a student here who does not know that the genius of Hunter embraced almost the whole domain of organized nature, that he became its Evangelist since the revival of letters, and left such records of it as never one human hand and mind had done before? Admitting the difficulty at this day of infusing absolute novelty into our comments on these valuable records, surely there may and ought to be a relative freshness, and even a perennial interest and instruction, in reviewing the works of a man of genius in the now steady and now fitful lights and shades of advancing science. And a more grateful homage than this could not be paid to the memory of a great man. It is to view his reputation in the very glass in which he himself would like to see it were he to reappear among us; and, though he be dead, to show how "he yet speaketh."

By the book of Hunter, we mean the grand exposition of the works of nature to be found in his magnificent Museum as well as in his writings. These last contain some parts which have since been supplanted by better matter, and others which were not even equal to the knowledge of his time; though we cannot fail to admire the vast number of truths displayed in

* Mr. Ottley's Life of John Hunter, in Mr. Palmer's edition of his Works, i. 146.

those publications and so formed into a consistent whole, with the illustrations of his Museum, as to afford a beautiful example of what poor things mere detached or heterogeneous facts are, compared to what they may be when touched by the magic wand of genius and seen in the light of comprehensive and methodical truth. Thus, indeed, has Hunter established the most important era of modern times in physiological science, and left an imperishable boon to his successors, in the foundation of philosophical surgery, justly the pride of his school, the honour of which, so long as we can appreciate it, will be reflected on us and on our profession.

And, as Coleridge perceived, he has done still more. In Hunter's time zoological science was so oppressed by heaps of facts as to be in danger of sinking under their number, confusion, and weight, until he so surveyed and arranged them as to show their affinities and contrasts. Long before, indeed, there had been a sort of dead order, which it was reserved for his genius to mould or digest by expositions of relation and difference, of unity with progression or continuity of transition or development, into a living method. No one can properly contemplate his unrivalled Museum, "constructed for scientific apprehension out of the unspoken alphabet of nature," in connexion with his writings, without perceiving this great truth, nor without being impressed with the force of evidence by which the master spirit was led to the impressive and crowning conclusion that life is either independent of or precedent to organization,—recalling the Active Nous of Aristotle.

Moreover a somewhat familiar acquaintance with Hunter's works has long since taught me to look up to him as the foreteller of many principles or central phenomena only recently become well known by new or improved means of research, and claimed accordingly as late discoveries in utter ignorance or disregard of his earlier observations. Among other instances, his description of the leading fact in the formation of the buffy coat of the blood is particularly worth notice, not merely from its importance, but also because his priority in this respect was so little known or even suspected, so long completely hid, that it was pointed out only a few years ago* how he had anticipated the main result of the excellent observations of Schroeder Van der Kolk, Nasse, Henle, Wagner, and Wharton Jones. We have no time now to devote to this very interesting subject; but I hope in my next course of Lectures to introduce and explain diagrams of comparative microscopic analyses of such thin layers of blood as Hunter described,† showing, first, the red corpuscles

* Note xxi. to Hewson's Works, printed for the Sydenham Society: 8vo, London, 1846.

† Lecture ii., figure 16, reported in "Medical Times and Gazette," October 17, 1863.

of healthy blood scattered, and then collected into the well-known rolls with small interspaces of liquor sanguinis, and finally such rolls in buffy blood further attracted together laterally into clumps, with larger interspaces of that fluid, so as to produce the mottled appearance and spots of red observed by Hunter, and this by that very increased disposition of the blood to separate into its component parts to which he so truly attributed the phenomenon*.

Nevertheless, while thus careful that his originality be not unfairly ignored, we should be equally solicitous not to attribute to him the merit of discoveries to which he has no just claim---a caution the more needful, as such mistakes have been too often committed, of which an example is afforded by the assertion that it was not known till he demonstrated it upon what part of the blood its spontaneous coagulation depends, which erroneous statement, by the then Hunterian Professor, still stands, never yet corrected by its author, in the preface to the 4th volume of the last edition of Hunter's Works. Hunter's genius needs no meretricious tribute. We have been taught by a great poet to "look through nature up to nature's God"; and may we not in a like spirit of reverence regard her prophets? We should ever remember that it was Hunter's river that fertilized the physiological fields of Europe, comparatively barren before:

> "O could I flow like thee, and make thy stream
> My great example, as it is my theme!"†

It would, however, be a very hopeless task to attempt, in the single hour allowed for this Oration, anything like a satisfactory view of Mr. Hunter's labours, although it seems to me that this might be done in a number of successive orations, especially when the subject has received so much elucidation from my predecessors. To this end, we have only to choose some remarkable truth on which the genius of Hunter shone, to note the state of existing knowledge just before he found that truth, and finally to survey it by the lights of modern science. This is the course I propose for the present occasion; and, far from feeling any want of matter, it so abundantly crowds before the mind that the chief difficulty is one of selection.

While our science lasts, no time can fade, nothing stale the infinite variety and value of Hunter's works, provided proper care be taken of them. But this involves a great amount of labour and expense, which must accrue with the growth of the Museum, and which your Council has met and is prepared still to meet, if not always most judiciously, certainly with becoming zeal and liberality, sparing neither pains nor cost in pursuit of this primary object, and it is to be hoped, with a due sense of

* Mr. Hunter's Works, ed. by Palmer, i. 235, 381.
† Sir John Denham.

the importance of the great and pure well of Hunterian biology. Of such care, the single example of the Descriptive Catalogues and Memoirs, amounting to no less than 29 quarto volumes (besides the 8vo Synopsis), often richly illustrated by skilful artists, will afford strong evidence. Truly this is a magnificent series, of which our College may be justly proud, both as a fitting tribute to the memory of Hunter, and as a comprehensive and particular account of the design and contents of the present Museum. And no wonder, seeing what those volumes represent, and that they were drawn up with the aid of the Hunterian MSS. and published writings,—continued, expounded, or composed originally by such of his followers as the Clifts, Owen, Quekett, Paget, Stanley, Morris, and Taylor, occasionally with the valuable co-operation or assistance, in their respective departments, of Bowerbank, Gray, Gerard, Holdsworth, Rupert Jones, Murie, W. K. Parker, Stewart, R. F. Tomes, and Adam White. Probably there were other aids; but these are the only names I have been able to glean. It is supposed that Sir Wm. Blizard may have had a share in the compilation of some of the earlier volumes; and I believe it is not doubted that he took great interest in the good work. However, it must not be supposed that we now pretend to give a history of the Catalogue, much less to attempt any description of the relative labours of its authors, or compilers, as there is only time to take a passing notice of the most prominent efforts of your successive Councils in this momentous business. And I may add, from personal and painful experience while I was Chairman of the Museum Committee, that this paramount duty was not always prosecuted without difficulties of a very unexpected kind, though the larger part of it had been done before I had the honour of a seat in your Council*.

But, time pressing us no longer to delay a choice from the exuberance of riches, we will at once select the Fibrin of the Blood as an interesting, and instructive example—considering it not discursively, but specially in relation to certain points of its anatomy and physiology, and not forgetting that this was the central and darling point of Hunter's long labours on this great argument. As we have already hinted, the fibrin was well known to be the spontaneously coagulable matter of the blood years

* Mr. Thomas Stone obliged me with a sight of some MSS. of Mr. Clift, containing sad complaints of his interruptions while writing the Catalogue. The eminent labours subsequently therein of Owen, Quekett, and Paget are well known. Of the Memoirs on the Pearly Nautilus and Mylodon, Professor Owen is the author; and the Memoir on the Glyptodon, now judiciously entrusted to my colleague, Professor Huxley, will probably prove no less valuable. The volume on the fossil invertebrates, many of them Hunterian, might have been indefinitely delayed but for the able assistance which the Council happily obtained from Mr. Morris.

before his time; and the fibrin of the clot had been accurately described by Malpighi, Borelli, Ruysch, and others on the Continent, and by Samuel Collins in England; while in both countries the membraniform appearance of the fibres had been clearly observed, as well as the true nature of the so-called polypi of the heart and of the buffy coat of the blood. Yet these excellent observations, though current for a while, were afterwards hid and the fibrin ignored, during a strange reign of fancy in physics and poverty of imagination in poetry. In France the truth began to revive under the care of Petit, Senac, and Quesnay, only to be smothered a second time by a general and protracted ignorance or forgetfulness of the true properties of the fibrin. It was utterly lost or overlooked again. Accordingly, coagulation of the blood was either attributed merely to a change in the serum, to an aggregation of the red corpuscles, or to a new arrangement of imaginary colourless nuclei of these corpuscles supposed to run together so as to form the strings of fibrin. It is remarkable that this last error, which was general on the Continent up to the year 1832, though originating from Sir Everard Home and Mr. Bauer, never prevailed in Britain. Still the error of attributing coagulation to a running together of the red corpuscles did; it was the current doctrine, until it was upset finally in 1760 and 1770, and the truth thenceforth proved, established and evermore maintained here, by the exact and conclusive experiments of Dr. Richard Davies and Hewson. And thus Mr. Hunter neither has, nor could he ever have pretended to, any claim whatever to the discovery of the coagulable principle of the blood, nor indeed of the simple distinctive characters either of this or of the other two proximate principles of that fluid. He proved experimentally that no heat is produced in the act of coagulation, and that the fluidity of living blood is not caused by its warmth, and truly observed that a clot of fibrin may be "as tough and elastic as the coats of an artery, to appearance becoming fibrous, and even forming laminæ . . . . . which gives us a clear idea how a membrane may be formed, and probably can be varied according to the impression made on it by the surrounding parts."*

Here then he was entering on the special vital properties of the fibrin—a step as much in advance of the ancient and true doctrine of the life of the compound blood as any discovery would have afterwards been to a similar effect of any other proximate animal matter. In the same category he included the property which the fibrin possesses of coagulating spontaneously—an opinion which I have elsewhere shown to be very questionable †. But when he showed how the fibrin can be or-

* Hunter's Works, edited by Palmer, iii, 24.

† Hewson's Works, printed for the Syd. Soc., p. 21; and 12th College Lecture, reported in Med. Times and Gaz., Feb. 28, 1863.

ganized by the development within it, or from contiguous parts, of blood-vessels, and assimilated with those parts; how it forms the early bond of union in and the first step for the reparation of wounds; how it closes up divided arteries, and has the power of forming blood-vessels in and by itself*; he had fairly reached a field of inquiry which was far beyond the knowledge of his time, and which produced such fruits as gave a new and improved feature to physiological and surgical science. If he too much confounded the compound blood-clot with the more simple one of fibrin, it was with the clearest knowledge that this last is the solid framework or texture, elastic, fibrous, or laminated, "giving us a clear idea how a membrane may be formed and varied according to the impression made on it by the surrounding parts." An indication this of a central phenomenon, no less striking and important for us than when it first appeared with all the charm of novelty, and to which the observation of Dr. Davy, on the influence of the viscidity of semifluid fibrin on the forms of false membranes, is an interesting addition. That novelty is now gone; but I am old enough to remember when it yet lingered among us, and hope that at least a few of my superiors here may retain equally pleasurable reminiscences of the subject. To the minds of Hunter's disciples, contemporaries or immediate successors, it was a sort of spell. On this question the respected and venerable Clift, in his proud sanctuary of the Museum, might have had his enthusiasm ever and anon lit up most delightfully by the student visitor; and when some of our great teachers, as the late Mr. Abernethy, had well wound up the soft melody of their eloquence on the vital endowments of the coagulable lymph of Hunter, the warmth of their admiration and reverence was like

> "An Orphic tale of high and passionate thoughts
> To their own music chaunted!" †

The idea of these vital endowments of the fibrin was far beyond the knowledge of the fine old observers, such as Harvey, Malpighi, Borelli, and Samuel Collins. The first had a very just and exalted doctrine of the life of the compound blood; and the three latter, as well as Ruysch, distinguished that part of it which is spontaneously coagulable, besides its form and texture when coagulated; but that was all. It was left to the genius of Hunter to invest the fibrin with a special dignity never dreamt of in their philosophy, just as one touch of nature's own poet may give an enduring interest and importance to familiar, lowly, and commonplace objects. Now this doctrine of Hunter was current in the schools while I was a pupil, and remained so up to the advent in this country of the cell-theory of Schleiden and Schwann, by which the leading tenet of Hunter has been for

* Hunter's Works, edited by Palmer, iii. chap. i. § 6.
† Coleridge.

many years eclipsed, and indeed supposed to be put out evermore; but with what justice, we shall be better able to determine after such evidence has been adduced as, it is hoped, may lead you to reconsider if not reverse that verdict.

"All the organic tissues," says Professor Schwann, "however different they may be, have one common principle of development as their basis, namely, the formation of cells; that is to say nature never unites molecules immediately into a fibre, a tube, and so forth, but she always in the first instance forms a round cell, or changes, when it is requisite the cells into the various primary tissues as they present themselves in the adult state. . . . . The simplest form which animal matter assumes is that of a nucleated cell. . . . . The most elementary form with which we are acquainted is that of a cell, containing a nucleus within it, which again contains a granular body. . . . . This appears to be the primary form which organic matter takes when it passes from that of a proximate principle to an organized structure." Thus far Schwann and his followers. All this and even more to the same effect is or was lately current in the books put into the hands of our pupils, and is taught by certain recent German writers, made popular here by British patronage and translations, and this in spite of the notorious fact that those works, though often possessing great merit in other respects, are, as regards some of the most important points of physiological history and the fair fame of several of our best observers, really worse than useless.

So far from a cell being the "primary, simplest, or most elementary form," either animal or vegetable, it is certain that, passing by the state of solution in which organic matter exists in fluid fibrin, there are in it, and in other fluids or soft matters, under certain conditions, numberless molecules concerning which we have been for years insisting that they must be intimately if not fundamentally connected with growth and nutrition; while fibres may be unquestionably earlier and more simple forms than cells. In fact, nearly a quarter of a century has elapsed since it was proved that the formation of the fibrils in fibrin * is such an immediate result of its coagulation, as to be utterly irreconcilable with the cell-theory. At that time, and for years afterwards, this objection to the catholic doctrine was either quite disregarded or deemed heretical; but every successive addition to our knowledge has only tended to confirm the conclusion, that primordial fibres are often formed before and quite independently of the immediate agency of any cells whatever. And what (so long since displayed also in this

* Gulliver's App. to Gerber's Anatomy, figs. 244-7; Lond. and Edin. Phil. Mag. for Sept. 1842.

country*) are the minute, equal-sized, or primary molecules composing the molecular base of animal chyle and vegetable latex, or the larger unequal-sized or secondary molecules in the same fluids, in the juice of the thymus and lymphatic glands, in the blood of young animals during the height of digestion, in the suprarenal glands, and in the semen just before its perfection? What are the like molecules in formative, germinal, or histogenetic matter †, at the growing-point, throughout organized nature? What are the globules of milk? All certainly examples of organic matter in a more simple or elementary form than that of cells. Indeed an eminent zoologist, of whose system the cell-doctrine forms the foundation, has actually elevated such molecules, especially the globules of milk, to the rank of independent animals, and instituted for their reception his order Endocystica ‡.

To return to the clot of fibrin. This is commonly without regular form, a mere shapeless lump or plate. But its intimate structure is a net of fibrils; and even its mass may assume all the characters of a body remarkably regular and perfect, varying in size from a mere globule or vesicle to a bag as big as a football, according to the quantity of fluid set aside to coagulate. In the fluid from a blister, and in a mixture of two varieties of serum, a coagulum may form spontaneously at the temperature of the air, and present the characters of a closed membranous sac of great delicacy, with still more delicate processes running from its outside towards the centre, so as to make lacunæ there of the enclosed liquid; and in these experiments § microscopic analysis repeatedly proved that the intimate structure of this artificial membrane was generally composed of extremely fine fibrils with a sprinkling of minute molecules, though sometimes it appeared only faintly and delicately granular. Nothing like a cell, no corpuscle so large, or possessing its compound structure, could ever be detected throughout this primordial and beautiful membranous sac.

Well, then, here is a common animal form, really a typical one, a membranous shut sac with its internal lacunæ bounded by processes of the membrane, the whole possessing the intimate structure of fibrin, and, above all, produced by the simple act of coagulation, utterly without the immediate agency of cells or of anything explicable by or involved in the cell-doctrine. And

* App. to Gerber's Anat., figs. 274-8, 266-8; Lond. Med. Gazette, June, 1843-4, p. 411; Proc. Zool. Soc., July, 1842; Med. Times and Gaz., Aug. 23, Nov. 29, 1862, and Feb. 14, 1863, figures 7, 11, 17, 12.

† Beale's Lectures, 1861; Bennett's Lectures, in the Lancet, 1863.

‡ Grant's Tabular View of Zoology, 8vo., London, 1861.

§ Note xviii. to Hewson's Works; and 11th College Lecture, rep. in Med. Times and Gaz., Feb. 14th, 1863, fig. 13, in which Dr. Buchanan's discovery is cited.

now we have demonstrated that this typical form, so distinct and regular, may be originated and completed by mere coagulation in dead serum—not of the serum itself, but of a principle which fails to appear by spontaneous coagulation in a single or separate sample of that fluid, though soon made to do so by mixing two varieties of it together in a basin or bottle. In several of these experiments, coagulation occurred within a few hours (and sometimes in less than forty minutes) after the two varieties of serum had been mixed together, while the very same liquids remained fluid for many days when kept apart, and then never coagulated at all, but only became putrid, though they were all exposed alike in open jars. Hence the appearance of the fibrin was not due merely to the action of atmospheric air, and the views of Polli and Virchow concerning bradyfibrin or a fibrinogenous substance fail altogether to explain the phenomenon. How then can we doubt that the same mysterious force or relation under which this structure is generated may be in operation in the living body, so as to be capable of producing similar forms there, quite independently of cell-development, consequently by a far more sublime and simple process than that propounded by the German professors, and yet in accordance with the old and beautiful doctrine of Hunter? What, too, in a form thus constituted, is to prevent, under what he called "the stimulus of necessity, or the impression made on it by the surrounding parts," the addition to this structure of blood-vessels and so forth, or its otherwise remaining throughout its existence an extravascular part? Surely the facts of this little experiment, viewed in the light of comprehensive truth, are immensely more favourable to the validity of Hunter's tenets than to that doctrine by which they were supposed to be supplanted and destroyed.

When one cause is known and sufficient, why seek another for a fundamental process? Of two causes, the simpler, *cæteris paribus*, is preferable. Hunter always called the plastic fibrin coagulable or coagulating lymph, after Senac and Martin Butt. And what is the animal protoplasm, plasma, blastema or cytoblastema of the Germans but the coagulable lymph of Hunter? He observed that when it is effused from the blood-vessels, either in disease or for reparation of injuries, it may become more or less altered and assimilated to the parts which produce it, and that it is common to all animals, as well as capable of undergoing such changes as may be necessary for the growth and preservation of the species, being thus the most essential part of the blood. When he insisted on its power of forming vessels in and by itself, like the membranes of the chick*, there only wanted the further views of the process given by Schwann

* Hunter's Works, edited by Palmer, iii. 37, 119.

and his disciples. To these delightful prospects might Hunter have been led, using the microscope so well as he did in his experiments on suppuration, had he not indulged in such an unfortunate disregard for and strange ignorance of the import of Hewson's observations on the formation and structure of the blood-cell; for then cell-genesis, with more or less of the legitimate results thereof, could hardly have escaped his detection.

Now we hope sufficient has been said to show the relative merits of Harvey and Hunter as to the doctrine of the life of the blood, and that it must be a vulgar error to suppose that Hunter only left this momentous subject as he found it. So true and noble were Harvey's expressions concerning this question, that they have always appeared to me more like a solemn hymn to the dignity of that fluid, and a fitting tribute to the declaration of the inspired writer of the Pentateuch, than a mere physiological dissertation; but they were confined notwithstanding entirely to the life of the compound blood, whereas it was the great merit of Hunter to advance so much further as to furnish the complement to Harvey's doctrine, by a new flood of light on the special vital endowments of a particular part of the blood—the fibrin. Thus the discoveries of these two great men in this department, so far from being either identical or at variance, are true and independent illustrations of the same important inquiry. The eminent and ingenuous Schwann, in his turn commencing from Hunter's observations, as Hunter had done from Harvey's, made another signal progress, by an exposition of those intimate processes of organization which were before unknown. Still, though this also was a noble discovery, it cannot be exact, so far as it not only fails to comprehend, but actually rejects, a most interesting part of the true one of Hunter. We shall soon see how Hewson, on a different constituent of the blood, was above his distinguished contemporary.

It is not pretended on this occasion to have given an exposition of the cell-doctrine, which would have to be studied for that purpose by the lights of such eminent observers as Goodsir, Huxley, Savory, and Bennett. We have merely attempted to examine those points of it which concern some of the fundamental principles of Hunter. Of the great amount of truth comprised in that system of Schleiden, Schwann, and Valentin, and the gratitude due to its authors, no physiologist entertains a doubt, in spite of such errors as we have incidentally suggested, and the equally important objections in Mr. Savory's excellent Lecture.

But it is hoped that we have now adduced sufficient evidence to prove that the Hunterian doctrine in question stands yet in all the majestic simplicity of truth, really unaffected by the more complex tenets of the illustrious German histologists—in

fine, that even this single scene in the great drama, this little episode in the grand epic of Hunter's labours, would be alone sufficient to show the depth of his genius, to entitle him to the admiration and gratitude of posterity, and to the place of honour in philosophical surgery.

Hunter yet lives in the hearts of his disciples; and these, even now, after following his bones from their first resting-place to our venerable Abbey, are erecting his statue, a marble testimony of their respect, amid the deeds he loved so well. But all the shows of art, pictured pomp or sculpture, "speak in feeble imagery their own cold powers," needless, frail, and vain for his renown. His best eulogy, as of other great men, is to be found in his Works, especially in his Museum; and there, verily,

> "He in our wonder and astonishment
> Hath built himself a live-long monument.
> And so sepulcher'd in such pomp doth lie,
> That kings for such a tomb should wish to die."*

And here we might have concluded, but that, since you were last addressed on this anniversary of Hunter's birth, death has been so busy among us as to number among his victims such worthy disciples of the great physiologist—*haud passibus æquis*—as Quekett, Norman, Stanley, and Brodie; to whom a passing tribute must be paid, though we have no time for a critical examination of their respective merits, much less to anticipate the work of the biographer. The three latter died full of years, and in the enjoyment of that which the greatest secular judge of human nature tells us "should acompany old age, as honour, love, obedience, troops of friends."

But Professor Quekett was early lost to science, and not without leaving beautiful marks of his course behind him. He was one of the first, if not the very first, deceased in this country, of those eminent men who devoted their talents exclusively to the abstract and higher branches of our profession, quite regardless in this noble pursuit of the meaner considerations of practice and profit. His researches, small or insignificant as they might appear to some minds, are really large and important; and the remark that has been often repeated of late, to the effect that his observations were only of a fragmentary or isolated character, deficient in connexion, I believe to be unjust to his memory. He widely explored the field of histology. His inquiries not only extended through the animal and vegetable kingdoms, but also to mineral substances; while his collected specimens of intimate structure of organic nature surpassed in number and value anything of the kind before displayed in Britain. And these, which he had indeed found and collected

* Milton's 'Epitaph on the admirable dramaticke Poet W. Shakespeare.'

as mere loose facts, with little more affinity than the order of words in a dictionary, he soon reduced by their relations to arrangement and method, of which only a mind diligent and comprehensive could have been capable, as is well attested by his published Lectures, and by several volumes of the Descriptive Catalogue of our Museum, more especially by the Histological Series. Such a mind could not be thus employed without discovering central or comprehensive truths, could not be confined to mere fragmentary, subordinate, or minor facts*. Accordingly, among other fundamental or leading phenomena, his early observations on the nature and arrangement of capillaries led him soon to exhibit, in the blood-vessels alone, grounds for a rational hypothesis of the significance and use of the air-bladder in fishes. His original researches, two or three years afterwards, on the intimate structure of bone were of still higher import; for they at once and for ever demonstrated the analogies and differences of this structure, and with such admirable precision and clearness as not only to indicate the essential characters in this respect of the vertebrate sub-kingdom, but also the means of determining the affinities and contrasts of minute fragments of the organic remains of a former world. So no wonder that, when results of such importance afterwards appeared in Continental publications pretending also to display the literature of the subject, but without the least reference to or acknowledgment of his observations, the notion should have occurred that they had been "conveyed," as Ancient Pistol would say; though we cannot but feel surprised when we find this too frequent practice, this sorry desertion of truth and of the just claims of British science, silently acquiesced in, if not approved, adopted, and patronized, by some one or other of our Societies, translators, commentators, or eminent teachers. But, as Mr. Quekett more than once emphatically remarked to me, he suffered this indignity in very worthy company. And it may be added, as I have said elsewhere, that the fair fame of our illustrious countrymen should be accepted by us as a sacred legacy and trust, to be cherished while our science lasts; I will hope, too, that generous hearts will not be wanting among us to defend Hewson and Quekett on the proud pedestals which they have so honourably gained.

Though Mr. Quekett, like Pope, might truly have complained of that long disease, his life, he retained to the last his wonted serenity and affability, kindness and humility; while his constitutional sweetness of temper was neither affected by the

* His observations on Raphides were early and imperfect; but these I have so far extended and reduced to order as to show their value as botanical characters. See several numbers of Ann. Nat. Hist. for 1863, Prof. Beale's "How to Work with the Microscope," 5th edition, plates xlvii. and xlviii., and the Roy. Society's Cat. Scientific Papers.

plagiarism of his labours abroad, nor even by the pitiful attempts of anonymous defamation at home. He was one

> . . . . . "so spotless in deed,
> So pure in thought, both without spleen and gall,
> That never injured creature, never had heart
> To think of wrong, or ponder injury."*

In truth, it was Mr. Quekett's happiness to have his mind so full of the importance of those pursuits which he loved so well and truly, as to leave no room in it for the nurture of lower feelings. His gentle nature could not entertain what our great epic poet calls "the troubled sea of noises and hoarse disputes,"† but preferred in a calm and pleasant retirement to enjoy the still air of his delightful studies. He was not, like honest Izaak Walton's poor rich man, condemned to riches and then to a busy discontent; but enjoyed in his meekness, as promised by our Lord and the Psalmist, a far richer and better possession, and so had truly found the ways of pleasantness and the paths of peace. And if thus happy in the common routine of his life, "in populous city pent," how would his heart leap up when he escaped from that confinement for a short country recreation (such as angling, which he loved), and with joy and gratitude did then behold the outward forms and shows of rural nature,—

> "Well pleased with delights that present were,
> Fair seasons, budding sprays, sweet-smelling flowers."‡

Such were some of the ruling traits of this meek and good disciple of Hunter.

Mr. Norman was a man of a different stamp. He early marked out the best course by which to arrive at the goal for which he panted, and won it in a manner alike honourable to himself and to the profession. When we remember that he was Deputy Lieutenant of the County, and twice chief Magistrate of the city of Bath, we may be sure that he did not, like Mr. Quekett, entirely eschew politics and confine himself to the soft abstractions of science in the gloomy shades of collegiate bowers. This would not have suited Mr. Norman's genius, which was more allied to that practical form which has been said to be at once the pride and dominant character of the English mind. He pursued the paths of professional practice accordingly with admirable tact, sagacity, and self-reliance, and a kindly manner which won confidence and friendship. His abilities had been early recognized in a generous spirit by the late Dr. Parry, to whose patronage much of his early success was pro-

* Helena, in the Challenge for Beauty: a Tragic Comedy, by Thomas Heywood, 1636.

† Milton's Preface to his Second Book of Church Government.

‡ Drummond of Hawthornden.

bably owing—as I learn, among other particulars, through the courtesy of Mr. Hodgson and Mr. Soden, as well as that the venerable physician was glad to avail himself of the assistance of the young surgeon in those experiments on the arteries which have made the name of Parry familiar to physiologists. But Norman's success was really achieved by that excellence of judgment and skill in operative resource which entitles him to rank as one of the most eminent of the many provincial surgeons who have reflected honour on this College. Remembering his accurate diagnoses in cases involving the arteries, and how admirably he succeeded in taking up those vessels, even when great and unexpected difficulties had arisen in the course of the operation, we must concede to him an excellence in this important branch of surgery, and, to do him full justice, should consider the time when he was thus successful, only a few years then having elapsed since such an eminent authority as Richerand was declaring that "Mons. Abernethy prétend avoir lié l'artère iliaque externe." In the year 1825 Norman successfully tied that artery and followed Dr. Mott in fixing a ligature around the arteria innominata. Norman had tied the common carotid two years earlier. But his chief operation of this kind was a demonstration of the practicability and prudence of securing both the lingual arteries in a case where excision of the tongue had become necessary. This, too, was in 1825, as I gather, through the kindness of Mr. Hodgson, from a short and excellent MS. paper by Mr. Norman, read at a meeting of the Medico-Chirurgical Society, though not published in the Transactions of that learned body. To each young member of our profession who may have set his heart on the honours and emoluments of surgical practice, we may point to the conduct and career of Norman, and say, "Go, and do thou likewise."

Whether Mr. Stanley can be regarded as such an example is doubtful, since I know not that his success in this way was equal to his deserts. He was chiefly distinguished in surgical anatomy and pathology, and, though destitute of those graces of style with which his eminent master Mr. Abernethy was wont to adorn his instructions, was really one of the best and most successful teachers of his time, and a great expounder of what he loved to call practical anatomy. Those who, like myself, have had the advantage of his demonstrations must have felt that few lecturers ever possessed, and exercised so well, the power of transferring knowledge to pupils. It was impossible, for instance, to attend his demonstrations, at St. Bartholomew's, of the parts concerned in the different forms of hernia, without at once perceiving that remarkable perspicuity by which this branch of anatomy was then and there reduced to the level of the meanest capacity; and it would be difficult to overrate the amount of the best practical skill of this and kindred subjects

which he was thus the means of diffusing throughout the country. Those demonstrations were so highly esteemed, that at them we used to be overwhelmed by students from other schools---more especially from the Borough, even during the brilliant reign there of Mr. Green and Sir Astley Cooper. But it would be unjust to the memory of Mr. Stanley, to limit his merit to this ground. He was the author of numerous papers in the Transactions of the Medico-Chirurgical Society, and of several independent works---all examples rather of a vigorous understanding and perspicacity than of the creative faculty, happy reductions of his great experience and exact knowledge of anatomy to the practical service of our profession, and, in short, excellent contributions to surgical pathology.

Sir Benjamin Brodie was the last survivor of a great race; that is to say, of those eminent physiologists who were the glory of the school in Great Windmill Street, and of British physiology, at the end of the last and early part of the present century. In that remarkable school were delivered the first complete courses of Lectures, with adequate illustrations, in England; and there, by a splendid series of physiological researches, Mr. Brodie commenced that career which was thenceforth one unclouded blaze of light, shining during the greater part of his long life on the principles and practice of surgery, and illustrating at its close the difficulties of psychological science. His success was such as might have been expected; and he was really one of the few men who have shed a lustre on our profession by the rare combination of a good preliminary education, elevated mental talents, decision of character, singular tact and perspicacity, ample wealth in every sense, and a social position as exalted as the endowments by which he had won it. But though we regard his meridian and setting effulgence with so much respect, it is to its rising that posterity may look with more admiration, while the future historian of physiology in England may sigh that such a mind was ever diverted from those higher pursuits by the distractions of professional practice, —yet not without the consoling reflection of how much human misery was thus immediately alleviated, and that Brodie touched no subject without adorning it, engaged in no branch of science without extending its bounds and strengthening its foundations. Accordingly, his works on the Diseases of Joints and on the Urinary Organs had an important influence in this respect; and his last book, 'Psychological Inquiries,' affords abundant marks of his active and potent abilities. Still we revert with more interest to his earlier labours, and cannot avoid delighting in the skill and fertility of experimental resource, and sagacity of observation, by which, in accordance with the prior belief of Hunter, he demonstrated the insufficiency of the alluring and then universal hypothesis of Lavoisier, Laplace, and Black, concerning the gene-

ration of all the animal heat in the lungs. However, I have elsewhere* shown how Brodie's tenets, and those which truly attribute that heat to chemical processes throughout the body as well as in the lungs, may be regarded as results of two independent sets of observations which mutually illustrate each other, and this by that beautiful harmony of contrast which Coleridge has so admirably described. In lamenting the loss of Sir Benjamin Brodie we are feelingly reminded how fast remorseless time is depriving us of the great masters of the old Physiology, of the school of Harvey, Haller, and the Hunters, and of such of their disciples as Abernethy and Cooper, men who observed so well and truly the broad and most useful facts of the science in relation to the practice of our profession—and this without the aid of the present more advanced state of animal chemistry, and of the improved optical instruments which have created, or at least given its present eminent position to, the new histology. But we must not forget the eminent services, without such advantages, rendered by Hunter and Hewson in England, and by Malpighi, Andrew Bonn, and Bichat on the Continent, nor the danger of cultivating the new branches to the neglect of the old trunk.

Neither can we take leave of this last of the very great teachers of the Windmill Street School (where flourished also the Hunters Cruickshank, Wilson, Baillie, Sheldon, Charles Bell, and other illustrious men) without some tribute to the genius of Hewson, who first succeeded Mr. Hunter as assistant to Dr. Hunter in that admirable theatre of anatomy and physiology. This respect to the memory of Mr. Hewson is the more necessary, not only because he has had scanty justice in this place†, where his merits were almost as unworthily appreciated in the oration by Sir Benjamin Brodie as they had before been in the writings of Mr. Hunter, but that it is at once a duty and a pleasure, in the cause of truth, to vindicate the fair fame of an eminent English physiologist, and to defend that fame from the modern Germanic aggression to which it has been so ungenerously subjected—in short, to claim and execute the trust of his reputation in behalf of the British School of Physiology.

Hewson had reached so far into an undiscovered region of histology as to be quite beyond the knowledge of his time and the comprehension of his contemporaries and immediate successors. None of them, not even the Hunters, Cruickshank, or Sheldon, could share his conviction that "the red particles of the blood are conveyed to the different parts of the body to

* College Lecture ix., reported in the "Medical Times and Gazette," Jan. 17, 1863.

† Though I find that Mr. Grainger, in the Oration of 1848, has given an excellent notice of Hewson's "beautiful and masterly series of experiments on the endosmotic processes in the red corpuscles of the blood," and of his position in regard to "the discovery of the nucleated cell."

answer the purposes of nutrition and vivification, and that the thymus is necessary to perform an office in the early part of life depending upon respiration "*; none of those eminent men or their disciples cared for his proofs that this gland is an appendage to the lymphatic system for the formation of central particles or nuclei when these are most needed for sanguification. Much less could they understand or realize his equally new and beautiful exposition of the development, structure, and diosmotic force of a cell. Here he was a lone star in a dark firmament. And having been thus, as far as regards the limited circle of his researches, a man above his age, he for that very reason requires to be judged in the light of a later generation. But it is pleasant to note that there was at least one exception to that dreary neglect, one physiologist who had immediately followed those researches, and "frequently repeated all the experiments since Mr. Hewson's death." It was the ingenuous youth Magnus Falconer who thus saw and believed the wonders he had been taught by his master and brother-in-law, and paid such a noble respect to his memory in the publication of the last part of his 'Experimental Inquiries.' And yet Mr. Hunter, sixteen years after the appearance of that volume, not only discredited some of the best observations therein on the red corpuscles, but declared that "the circumstance of the red part of the blood having form probably led anatomists to pay more attention to it than it deserves, as if they could thence explain any essential principle in the blood or animal economy"†. Nevertheless there was Hewson, at least twenty years before the death of Hunter, not only correcting the injurious errors of Leeuwenhoek and his school, and propounding or establishing instead great truths about the blood-corpuscles, but fairly entering that prolific field of cells and endosmosis which was left utterly forgotten and barren for upwards of half a century afterwards, until new minds, with the aid of better instruments, found in it such a variety of rich fruits, and confirmed so many of his long-neglected conclusions, as to reap the harvest of his labours.

Hewson's observations on the lymphatic glands, thymus, and spleen are so valuable that they still form the best foundation for future research concerning the recondite office of those organs, as well as part and parcel of some of the most recent tenets of our day, and a depository of facts and theories which, if not better known on the Continent than here, have certainly been translated thence into our own language, and patronized by his own countrymen as recent and original foreign discoveries —all this, too, not only without any honest mention of his name, but with that contempt for the just claims of Hewson and

* Hewson's Works, Syd. Soc. ed., pp. 282, 263.

† Hunter's Works, edited by Palmer, iii. 59.

British science which such ignoble treatment of the fruits of his labours would imply*. When he undertook the inquiry relating to the lymphatic glands, nothing whatever had been done to a like effect on the subject; and it was despised or forgotten for years afterwards,—though we must now perceive how new and true most of his observations and experiments were, and that such a masterly exposition of the phenomena with the imperfect instruments at his command (the best of which was a simple lens of $\frac{1}{2\frac{1}{3}}$rd of an inch focal length), and amid the prevailing darkness of the time, presents one of the most remarkable achievements of physiological science—and this not as a result of one of those happy chances by which some as great or greater discoveries may have been suddenly made, but as a logical sequence of an extended series of experiments and observations, clearly and wisely devised, and patiently and skilfully executed during the course of several years of his too short life; so that, considering also his labours concerning the mature red corpuscles, he must be regarded as the great founder of this branch of histology.

However little those inquiries were comprehended at the time, his merits on other subjects were recognized during his life. In 1770 the Copley medal was awarded to him by the Royal Society for his highly interesting investigation and demonstration of the lymphatic vessels of oviparous or pyrenæmatous†

* Thus, in spite of Dr. Hughes Bennett's judicious assertion of the undoubted right of our countryman, Professor Virchow actually claims for himself, in connexion with his so-called Leukæmia, and with the silent approval of his English editor, Hewson's discovery of the office of the lymphatic glands. And so we need not be surprised at the same professor's pretensions to the discovery of Thrombosis and Leucocythæmia nor at any assistance he may have had in such courses from his friend Professor Kölliker, seeing that this Professor also treats Hewson and Quekett with similar contempt, though it is surprising that he should have been permitted to do so under even more remarkable British patronage. Far more potent agency, however, would be required to wash Hewson's name out of the page of physiological history; "merses profundo, pulchrior evenit." See Virchow's Cellular Pathology; Kölliker's Microscopic Anatomy; Med. Times and Gaz., Feb. 28, 1863, p. 208; Bennett's Leucocythæmia, p. 99; and Davy's Army Diseases, p. 267.

† According to my observations, the presence or absence of a nucleus in the regular or mature red corpuscle of the blood is really the most single, universal, fundamental, and characteristic difference between oviparous and mammalian vertebrates, hence denominated by me, Pyrenæmata and Apyrenæmata, from πυρήν nucleus, αἷμα sanguis. Whatever may have been the genesis of that corpuscle in Mammalia, and notwithstanding I have long since proved that some of their red corpuscles may be nuclei of much larger pale cells, in its free, whole, and perfect state it is no longer a nucleus or anything like one, nor a cell, but a peculiar body without any known homologue. See Phil. Mag. for Sept., 1842, p. 170, fig. 2; and College Lectures, rep. in Med. Times and Gaz., 1862-3, figures 1 and 8.

vertebrates; and on that occasion the adjudication was declared by the President to have been made in favour of Mr. Hewson for the best contribution to the advancement of science and useful knowledge during the past year. And when we add to his other deserts his complete demonstration of the distinctive characters of the three proximate constituents of the blood, which were set forth by him so clearly and peremptorily as to give us in this country the enjoyment and profit of those fundamental facts ever since 1770, we must also bear in mind how much such knowledge was needed, for then and upwards of sixty years afterwards such a general ignorance prevailed on the subject throughout the Continent that Professor Johannes Müller, even so late as 1832, had to remove the darkness there by a supposed new discovery which was no more than a needless confirmation of Hewson's proofs. So we may well feel what a debt of gratitude we owe to our young and illustrious countryman. Considering, therefore the novelty, accuracy, number and weight of his inquiries concerning the blood, we must be led to the verdict that he transcended both Mr. Hunter and all his other predecessors and contemporaries, in every part of Europe, in this important and central branch of physiology.*

Finally, Mr. President and Gentlemen, if I have rather forcibly submitted to you some of the just claims of the British School of Physiology, in the labours of John Hunter and his disciples, it has been done conscientiously in the defence of truth—I hope, temperately and neither lightly nor inconsiderately, and yet with sufficient decision and accuracy to assert if not maintain her sacred cause. Let us never forget that we belong to the country of Harvey and the Hunters, nor, when we deplore the loss of such of their followers as Brodie, Norman, Quekett, and Stanley, cease to feel that excellent consolation which is afforded by the character of their lives and the example they also have left to us and to our posterity; for

"These were honourable men in their generations."†

* When I was a pupil the name of Mr. Hewson was seldom or never mentioned in the great metropolitan schools, so much had it been eclipsed in England by the authority of Mr. Hunter. More recently, an eminent teacher, in his Lectures, as well as by an early correction of Professor Müller's mistake concerning the history of the revival of a knowledge of the agency of the fibrin in the coagulation of the blood, has wisely appreciated the merits of Hewson. And Professor Sharpey's respect for British physiological science did not end there; for to him also, with the generous support of Dr. Babington and the late Dr. Clendinning, was chiefly owing the success of my proposal for the reprinting of the Works of Hewson by the Sydenham Society. In France the high value of Hewson's Works has been gracefully acknowledged by the venerable and distinguished Professor Milne-Edwards, in the first volume of his "Lecons sur La Physiologie et L'Anatomie Comparée," 8vo., Paris, 1857.

† Ecclus. xliv., 7.

NOTES OF SOME OF THE

RESEARCHES

IN

ANATOMY, PHYSIOLOGY,

PATHOLOGY, & BOTANY,

OF

GEORGE GULLIVER, F.R.S., F.R.C.S.E.,

HONORARY FELLOW OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND,
FORMERLY MEMBER OF THE COUNCIL OF AND PROFESSOR OF
COMPARATIVE ANATOMY AND PHYSIOLOGY TO THE
ROYAL COLLEGE OF SURGEONS OF ENGLAND, AND SURGEON IN THE
ROYAL REGIMENT OF HORSE GUARDS.

CANTERBURY:
PRINTED BY CROSS AND JACKMAN,
6, High Street.
1880.

Notes of some of the Researches in Anatomy, Physiology, Pathology, and Botany,* of GEORGE GULLIVER, F.R.S.

Appendix and Notes to the English version of Gerber's General and Minute Anatomy, 8vo., with an Atlas of Plates, Lond. 1842.

Introduction and Notes to the Works of William Hewson, F.R.S., for the Sydenham Society, 8vo., Lond. 1846.

A few Notes to Rudolph Wagner's Physiology, translated by Dr. Willis, 8vo., Lond. 1844.

Lectures on the Blood, Lymph, and Chyle of Vetebrates, delivered at the Royal College of Surgeons, during the Sessions 1861—63; and reported, with engravings, in the Medical Times and Gazette, Aug. 2, 1862, to June 13, 1863.

The Hunterian Oration, delivered at the Royal College of Surgeons, Feb. 14, 1863, and published at the request of the Council of the College; second edition, Canterbury, 1880.

BLOOD OF VERTEBRATES.

Red Corpuscles.—Extensive Tables of Measurements, and observations on the sizes, shapes, and structure of the red corpuscles (Lond. and Edin. Phil. Mag., Dec., 1839, to Sept. 1842; App. to Gerber's Anat.; Notes to Hewson's Works; Proc. Zool. Soc., at intervals, June 9, 1840, to Feb. 10, and—of the Lampreys—Dec. 6, 1870; College Lectures, Med. Times and Gaz., Aug. 2, 1862, to Dec. 19, 1863; Journ. Anat. and Physiol. vol. 2); with plans to a uniform scale of their sizes, shapes, and structure, in the different classes and orders (Proc. Zool. Soc., Feb. 25, 1862, Feb. 10, 1870, and June 15, 1875, and Coll. Lectures); the Measurements tr. into fractions of a millemeter (Milne-Edwards, Leç d'Anat. Comp. et de Physiol., tom. 1, 8vo., Paris, 1856.) Several of the results are noted under the eleven following paragraph-ciphers:—

1.—The Tragulidæ and some other Ruminants have red corpuscles smaller than any before known (Med. Chir. Tran., Nov. 26, 1839, vol. 23; Dublin Med. Press, Nov. 27, 1839; Proc. Zool. Soc., Aug. 9, 1842, May 9, 1843, and Feb. 10, 1870).

* Not published, but only printed privately for a special purpose. Further references may be seen in the Royal Society's "Catalogue of Scientific Papers;" but the present Notes cite publications beyond the plan of that Catalogue, and omit several included therein.

2.—The Edentates, on the other hand, are characterised by the large size of their red corpuscles (Proc. Zool. Soc., June 11, 1844, Jan. 24, 1854, and Feb. 10, 1870).

3.—Immediately after Mandl's discovery of the oval shape of the blood-disks of the Dromedary, these corpuscles shown to be alike oval in every other member of the Camelidæ; while, moreover, all these corpuscles conform in size and structure to mammalian or apyrenæmatous type, and by no means to that of the lower or pyrenæmatous classes (Med. Chir. Trans., vol. 23; Lond. and Edin. Phil. Mag., Jan. 1840; Note to Wagner, p. 237).

4.—Lanceolate, fusiform, crescentic, and other irregular shapes, assumed by the majority of the corpuscles in certain Ruminants (Lond. and Edin. Phil. Mag., with an engraving, Nov. 1840).

5.—The size of the red corpuscles often affords good taxonomic characters (App. to Gerber; Proc. Zool. Soc., June 9, Nov. 24, 1840, May 25, 1841, Feb. 25, 1862, and Feb. 10, 1870; Note xcviii to Hewson).

6.—Though there may be no relation between the size of the corpuscles and that of the species (the Mouse and Horse *e.g.*) of different orders of the class Mammalia, there is regularly so far such a relation in a single natural order or family of this class, that the smallest corpuscles occur among the small species and the largest corpuscles among the large species of such order or family (App. to Gerber; Notes xcviii and cxviii* to Hewson's Works; Proc. Zool. Soc., Feb. 25, 1862, and Feb. 10, 1870).

7.—Relation of the Size of the Corpuscles to Respiration (L. and E. Phil. Mag., Jan., 1840; Lecture ix, Med. Times and Gaz., Jan. 17, 1863; Proc. Zool. Soc., Feb. 10, 1870; Milne-Edwards, Leç sur la Physiol., tom. 1, 8vo. Paris, 1856).

8.—In conformity with the comparative uniformity of the general organization of Birds, there is so little difference in the size of their red corpuscles that the whole class resembles in this respect a single order of Mammalia; in other words, these corpuscles in the whole class of Birds are more uniform than the corpuscles of other classes or even of some single orders of other Vertebrates. The short diameter of the oval red corpuscles of Birds answering to the diameter of the circular red corpuscles of Mammalia (App. to Gerber; Note xcviii to Hewson; Proc. Zool. Soc., Feb. 25, 1862, and Feb. 10, 1870).

9.—While of all oviparous Vertebrates the red corpuscles are nucleated, in all Mammalia these corpuscles have merely a pale membranous base, and are non-nucleated; hence the divisions Pyrenæmata and Apyrenæmata (App. to Gerber; Lond. and

Edin. Phil. Mag., Aug. 1842, fig. 1, p. 109; Proc. Zool. Soc., Feb. 25, 1862, and une 15, 1875; ourn. Anat. and Physiol., vol. ii; College Lecture i, Med. Times and Gaz., Aug. 2, 1862).

10.—*Lepidosiren.*—Observations showing that the red corpuscles of this creature have rather a Bratrachian than Piscine character (Ann. Nat. Hist., Oct. 1848; Proc. Zool. Soc., Feb. 25, 1862, and Feb. 10, 1870).

11.—*Salmonidæ.*—Large size of the corpuscles in (Proc. Zool. Soc., Nov. 19, 1872).

Pale Globules of the Blood.—The difference between these and lymph-globules, see Lymph, p. 6.

Molecules, as cell-germs, see under Testes, p. 8.

Coagulation.—Proof that the blood coagulates regularly and quickly, and the muscles become rigid, in Deer, Foxes and Hares, hunted to death, and in Birds killed by fighting; contrary to the views, then current, of John Hunter and his disciples. Experiments showing that increasing the proportion of the red corpuscles hastens coagulation (Edin. Med. and Surg. Journ., Oct. 1845 and 1848; Notes iii and xii to Hewson's Works.

Buffy Coat.—An experimental inquiry, by which was discovered a progressive acceleration, in a sort of arithmetical ratio, of the sinking, from its commencement, of the red corpuscles during the formation of the buffy coat; that this sinking is neither due to an attenuation or a diminished specific gravity of the liquor sanguinis, nor to its retarded coagulation, but (as John Hunter, Wharton Jones and Nasse taught) to an increase of the aggregation into rolls and clumps of the corpuscles. Hence, when this aggregation is prevented by dilute saline solutions the liquor sanguinis is thinned, its coagulation retarded, and the buffy coat diminished or prevented; while, on the other hand, by artificially increasing the viscidity, or thickness, of the liquor sanguinis, the aggregations of the corpuscles and formation of the buffy coat are hastened or increased. Slow coagulation of buffy blood rather an effect than a cause of the separation of the corpuscles from the liquor sanguinis (Edin. Med. and Surg. Journ., Oct. 1845; Notes, pp. 6 and 34 to Hewson's Work; Lectures, with engraved illustrrations, Med. Times and Gaz., Sep. 12 and Oct. 17, 1863).

Fibrin.—Its clot, both in animals and plants, generally a structure of fibrils, often aggregating into membranous forms, and all this quite independently of cells—contrary to the cell doctrine then universally current—though the fibrinous clots often include cells; and cells, fibrils, molecules, and granular matter, compose the clots or membranes in inflammation. Vital endowments of

the blood and fibrin, with comparison of the inspired declaration of the Pentateuch, and the views of Harvey and Hunter (Gerber's Anat., Note, p. 29, and App., plates xxviii and xxix; L. and E. Phil. Mag., Aug. and Sep. 1842; Med. Times and Gaz., Feb. 14 and 28, 1863, figs. 11, 12, 13, 15; Hunterian Oration, 1863).

Softening of Fibrin or Thrombosis.—See page 9.

CHYLE.

Molecular Base.—The milk-like opacity of the chyle had always been attributed exclusively to the chyle-globules, just as the colour of the blood is due to its red corpuscles. But the series of experimental researches, carried on throughout the seasons from 1838-41, resulted in the discovery that this white opacity is due to a ground or base of an infinity of equal-sized particles, so faint and minute that, with any glasses lower than the highest powers then known, this ground presented only a confused opalescent or clouded appearance. But this, by the aid of the deepest objectives and best illumination, was at length resolved into the now well-known molecular base, the chief morphological element of the chyle, since recognised by Professor Hughes Bennett (Lectures on Molec. Physiol. Lancet, 1863) as of much importance in relation to the molecular doctrine of physiology. The formation of this very foundation of the chyle may be greatly quickened or increased by the moderate use of fermented liquor (Med. Times and Gaz., Dec. 12, 1863, page 610), a fact at variance with the extreme views of the teetotallers (App. to Gerber, plate xxxii; Note to Wagner, fig. cxlix; Lectures, Med. Times and Gaz., Nov. 14 and 28, and Dec. 12 and 19, 1863; Hunterian Oration, p. 10).

LYMPH.

Researches showing that the majority of the globules of lymph, of chyle, and of the thymus-juice are nuclei, while most of the well-known pale globules of the blood are nucleated cells; an essential difference not yet recognised, as may be seen, *e. g.*, in the current German books, and in Quain's Anatomy, 8vo., Lond. 1867, p. xlviii (Gerber's Anat., Note, p. 83, App. pp. 89—100, figs. 275—287; Hewson's Works, Note cxxii; Med. Chir. Trans., vol. 23; Lond. and Edin. Phil. Mag., June, Aug., and Sep., 1842; Note to Wagner, fig. cliv; Lectures, Med. Times and Gaz., Oct. 31, Nov. 14 and 28, Dec. 12 and 19, 1863, figs. 17—22, 6 and 5).

THYMUS.

Experimental proofs that it may be emptied of its juice by starvation and filled by nutrition; and (after Hewson) that the thymus is an appendage to the lymphatic system, largest, like the regular lymphatic glands, at the time of life when sanguification and growth are most active (App. to Gerber, plates xxxii—xxxiii.; Introduction and Notes to Hewson; Lectures above cited; and Huntérian Oration, 1863). This view concerning the thymus has since been repeatedly advanced, especially in Germany, as a recent view or discovery; see, *e. g.*, the French translation of Leydig, Traité d'Histologie, 8vo., Paris, 1866. In the following Cetacean:—

PULMONARY GLAND OF THE CA'ING WHALE.

A distinct body of the same kind as the thymus (Proc. Zool. Soc., May 24, 1853,—misapprehended by Murie in his paper on Globiocephalus, Trans. Zool. Soc., 1870).

FISHES.

1.—*Fibres of crystalline Lens.*—Their thinness and smoothness in the Lampreys, and their differences affording taxonomic characters in the class (Monthly Micros. Journ., April 1, 1869).

2.—*Fovea centralis Retinæ*, in the family of Sparidæ.—(Journ. Anat. and Physiol., Nov. 1867).

3.—*The Lampreys*,—though currently described as 'Dermopteri' devoid of Fin-rays, have these rays. The Genital outlet a single tubular process in each sex. Spermatozoa of the Lampreys. Platyelminthes in the brain, seemingly allied to Goodsir's *Neuronaia* Monroii, and hence named by Gulliver *Neuronaia Lampetrae*. (Quart. Journ. Mic. Sci., Jan. and Oct. 1872, reporting E. Kent Nat. Hist. Soc.; Proc. Zool. Soc., with engravings, Dec. 6, 1870, and April 20, 1875).

4.—*Nondescript Ossicles*, see Bones.

LUNG.

Elastic tissue covering the lung, and an agent in expiration, especially in the Horse (Note, p. 360, to Wagner).

BONES.

1.—*Nondescript Ossicles* in the Skull of osseous Fish (Ann. Nat. Hist., Dec. 1869).

2.—*Reparation of Fractures*, not necessarily a process like that of the original growth, since such flat bones as are developed in

membrane may be repaired through a provisional basis of cartilage (Edin. Med. and Surg. Journ., July 1835; Gerber's Anat. Note, p. 177).

3.—*Experiments on Fractures of the Patella.*—These fractures proved to unite by osseous matter, when the fragments are kept in contact by the more or less integrity of their fibrous covering; but when this tissue is completely ruptured, the fractured surfaces cannot be so kept together, and hence unite by ligament only. Thus the then conflicting opinions as to the re-union by bone or by membrane of intracapsular fractures of bones were reconciled (Edin. Med. and Surg. Journ., Jan. 1837).

4.—*Dissection of a Fractured Cervix Femoris* in which there was inversion of the limb (Edin. Med. and Surg. Journ., Oct. 1836).

5.—*Cases of Shortening of the Cervix Femoris*, independently of fracture, in young persons (Edin. Med. and Surg. Journ., July and Oct. 1836; Paget, Lectures on Surgical Pathology, 3rd ed. 8vo., Lond. 1870, p. 302, fig. 48).

6.—*Necrosis.*—Experiments showing that the then prevailing doctrine as to the removal of the sequestrum by the absorbents is erroneous. Dead bone ingrafted on living bone (Med. Chir. Trans. vol. xxi, 1838).

ARTICULAR CARTILAGES.

Atrophy, hypertrophy and softening of (Edin. Med. and Surg. Journ., 1837, vol. 48, pp. 65-67.)

MUSCLES OF VERTEBRATES.

1.—*Taxonomic value of the Œsophageal Sheath*, with Tables of Measurements of the primitive fascicles of different muscles (Proc. Zool. Soc., Sep. 10, 1839, June 14, 1842, April 22, 1869, and May 12, 1870).

2.—*Stiffening of Muscles*, and coagulation of blood, in animals killed either by hunting or fighting; contrary to the then current views of John Hunter and his school (Edin. Med. and Surg. Journ., Oct. 1848; Notes, iii and xii to Hewson's Works).

TESTES.

Tables of Measurements of the seminal tubes of Mammalia and Aves, with note on the histogenetic importance of minute molecules (Proc. Zool. Soc., July 26, 1842; Hewson's Works, Notes lx and cxliv; Lectures, Med. Times and Gaz., Aug. 23 and Nov. 29, 1862, figs. 7, 11, and 14; Hunterian Oration, p. 9).

FATTY DEGENERATIONS.

Cholesterine and other fatty matter, forming a diseased state in the coats of the arteries, shown to be the most common cause of spontaneous aneurysm of the large vessels, and of that similar weakening and rupture of the small vessels which is the proximate cause of the most usual form of cerebral apoplexy. Fatty degenerations in organs and morbid products—testicle, Bright's and other diseases of the kidneys, the lungs, tubercle, *e. g.*—in which it had not then been recognised; and such degenerations the immediate cause of the decay or atrophy of several animal tissues and diseased products (Med. Chir. Trans. vol. xxvi, Feb. 28, 1843; Gerber, note, p. 190; Notes to Boyd's Vital Statistics, Edin. Med. and Surg. Journ., 1843, vol. 60; Paget's Lectures on Surg. Path., Lec. vi, 8vo., Lond., 1863, and 3rd. ed. 1870, p. 106; Carpenter's Human Physiology, 8vo., Lond., 1869, p. 394; Drs. J. C. B. and Theodore Williams, on pulmonary consumption, Lancet, Apl. 1868).

SOFTENING OF FIBRIN.

Discovery, by an extensive series of experiments and observations, that softening of clots of fibrin is a distinct elementary disease, essentially different from suppuration, though these two diseases had always been confounded. Many years afterwards Prof. Virchow published in Germany the facts as discoveries of his own, under the name of Thrombosis, and that mistake has long been aided and abetted in England (Med. Chir. Trans., 1839, vol. xxii; Gerber's Anat., note, p. 29; Notes to Boyd's Vital Statistics, Edin. Med. and Surg. Journ., 1843, vol. 60; J. Davy, Diseases of the Army, pp. 267 and 288, 8vo., Lond., 1862; Hughes Bennett, Lectures on Molecular Physiol. and Path., Lancet, Apl. 1863; Aitkin's Science and Practice of Medicine, vol. 2, p. 867, 2nd ed., 8vo., Lond., 1863; T. Wharton Jones, Failure of Sight from railway and other injuries of the spine and head, p. 158, sm. 8vo., Lond., 1869; Paget, Lectures on Surgical Pathology, 8vo., Lond., 3rd ed., 1870, page 279).

TUBERCLE.

1.—*Site of Pulmonary Tubercle*,—shewn to be both inside and outside the air-cells (Note to Wagner's Physiol., fig. 175, repeated in Todd's Cyclop. Anat. and Physiol., vol. 3, p. 755; Notes to Boyd's Vital Statistics, Edin. Med. and Surg. Journ., vol. 60, July 1843; Lond. and Edin. Phil. Mag., Sep. 1842).

2.—*Histological Characters.*—Young or grey miliary tubercles composed chiefly of cells about 1-2000th inch diameter; crude tubercle, of shrunken, degenerating, shapeless, blighted or withering cells, with a preponderance of granular matter and oily particles, the fatty globules excessive in the brown consolidation of lung in phthisis (Gerber's Anat., App., plates xxix and xxxi; Notes to Boyd's Statistics above cited; Drs. C. J. B. and Theodore Williams, on pulmonary consumption, Lancet, 1868).

3.—*Endowments.*—Not plastic or histogenetic, but, on the contrary, hystolytic, or devoid of inherent power of development or growth, as the cells from which tubercle originates and increases only retrograde or degenerate into amorphous and lifeless corpuscles, and into granular and molecular fatty matter, all incapable of vitality or organization (App. to Gerber's Anat.; Notes to Boyd's Statistics, and Drs. C. J. B. and Theodore Williams, above cited; Med. Chir. Trans., 1843).

QUEEN-BEE JELLY OR BEE-BREAD.

Proved by microsopical and chemical examination to be an animal secretion belonging to the protein group, not a mere collection from flowers (Quart. Journ. Micros. Sci., July 1872, reporting East Kent Nat. Hist. Soc).

PHYTOTOMY.

1.—*Taxonomic value of Pollen*—Allied species of plants distinguished by their pollen-grains, as exemplified in Ranunculaceæ and Leguminoseæ (Ann. Nat. Hist., July 1865; Seemann's Journal of Botany, with figures, Sep., 1866; Popular Science Review, July, 1868).

2.—*Taxonomic value of Tissue-cells.*—This exemplified in Junceæ and Hymenophylleæ (Ann. Nat. Hist., with engravings, Aug., Oct., and Dec., 1863; Seemann's Journ. Bot., with figures, Oct., 1863, and, with figure of Epidermis of *Lemna trisulca*, Jan., 1869; Epidermis of leaves of Orchids, Quart. Journ. Micros. Sci., July, 1873).

3.—*Raphides, Sphæraphides, Long Crystal Prisms, and Short Prismatic Crystals.*—Their distinctive characters. Extensive researches resulting in the discovery of the importance of raphides as natural characters in systematic botany; affording a true distinction which is often more simple and available, fundamental and universal than any other single diagnostic; the raphides being constant and very easily found in the plant

producing them, from its earliest state—even in the seed-leaves —and throughout its frame in all stages of its existence. Thus, for example, in our Flora, Balsaminaceæ can be at once surely known from the other orders of Thalamifloræ, Onagraceæ from the other orders of Calycifloræ, and Rubiaceæ from the other orders of Corollifloræ; while, on the other hand, an order—Hydrocharidaceæ, *e. g.*—may be as certainly distinguished by the want of raphides which abound in its allied orders (Various numbers of the Ann. Nat. Hist., 1861-65; Seemann's Journ. Bot., March 1864; Quart. Journ. Micros. Science, Jan. 1864, July 1865, and—how and were easiest found—*ibid.* July 1869; as natural characters in the British Flora, *ibid.* Jan. 1866; and in the Flora of the World, with epitome of the author's former observations, Popular Science Review, Oct. 1865; cells and raphides of Duckweeds and exraphidian character of *Wolffia*, with engravings, Seemann's Journ. Bot., Dec. 1866, Jan, 1867 and 1869; Raphides, Sphæraphides and Crystal-prisms, with engravings, Science Gossip, May 1873; Short Prismatic Crystals in the testa and pericarp of several orders of plants, and in other parts of Leguminosae, with a plate, Month. Micros. Journ, December 1873; Sphæraphides of Urticaceæ and Leonurus, *ibid.* Dec. 1874; List of plants which afford Raphides, Sphaeraphides, Long Crystal-prisms, and Short Prismatic Crystals, *ibid.* September, 1877; Plant-Crystals, observations on, with two plates, in the 5th edition of Dr. Beale's How to Work with the Microscope; Classificatory significance of raphides in Hydrangea,, Journ. Roy. Micros. Soc., Feb. 1880).

4.—*Latex, Vegetable Fibrin, Starch-rods, and Molecules*,—described in many British plants (Ann. Nat. Hist., March 1862; Med. Times and Gaz., Nov. 29, 1862, and Feb. 14, 1863, fig. 11).

5.—*Petasites fragrans*.—Hermaphrodite: excellent as early bee-provender (Quart. Journ. Micros. Sci., Apl. 1873, p. 214.

6.—*Chenopodiaceæ and Bryonia*.—The mealy surface of Chenopods owing to utricular hairs, and the roughness of bryony leaves to calcareous granules (Report of East Kent Nat. Hist. Soc. in Quart. Journ. Micros. Sci., Apl. 1874).

INDEX.

/3.

THE END.

hd

Surds

8/4/